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Kentucky Annual Economic Report 2015

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KENTUCKY ANNUAL ECONOMIC REPORT

Center for Business and Economic Research
Gatton College of Business and Economics
University of Kentucky

2015



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KENTUCKY ANNUAL ECONOMIC REPORT 2015



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The **Center for Business and Economic Research (CBER)** is the applied economic research branch of the Carol Martin Gatton College of Business and Economics at the University of Kentucky. Its purpose is to disseminate economic information and provide economic and policy analysis to assist decision makers in Kentucky's public and private sectors. In addition, CBER performs research projects for federal, state, and local government agencies, as well as for private-sector clients nationwide. The primary motivation behind CBER's research agenda is the belief that systematic and scientific inquiries into economic phenomena yield knowledge which is indispensable to the formulation of informed public policy.

CBER's research includes a variety of interests. Recent projects have been conducted on manpower, labor, and human resources; tourism economics; transportation economics; health economics; regulatory reform; public finance; technology use and adoption; education policy; and economic growth and development.

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From the Director . . .

This report is one of the important ways that the Center for Business and Economic Research fulfills its mandated mission as specified in the Kentucky Revised Statutes (KRS 164.738) to examine various aspects of the Kentucky economy. The analysis and data presented here cover a variety of issues that range from an economic forecast for Kentucky in 2015 to a comprehensive presentation of long-term factors affecting Kentucky's future economic prosperity.



Dr. Chris Bollinger

With several economic trends moving in a positive direction for Kentucky, our 2015 economic forecast is more optimistic than it has been in recent years. The state lost 169,000 jobs from the peak of the last economic expansion in December 2007 to the darkest days of February 2010 when job losses finally bottomed out. Kentucky's unemployment rate was 10 percent or higher from April 2009 to December 2010—a twenty-one month period. Since then employment levels have improved and in November 2014 Kentucky's unemployment rate was estimated to be 6 percent by the U.S. Bureau of Labor Statistics. We anticipate it will hold steady and are forecasting a 6 percent unemployment rate for Kentucky in 2015.

Along with our two partners in this endeavor, the Innovation Network for Entrepreneurial Thinking, which is organized and staffed by the College of Communication and Information, and the Von Allmen Center for Entrepreneurship, which is part of the Gatton College of Business and Economics, we have produced an *Annual Report* that paints a diverse and complicated picture of our state's economy, its communities, and its citizens. Despite the constant change confronting us, there are timeless and enduring lessons. As we highlight, pursuing educational excellence as well as economic innovation are essential for Kentucky to improve its per capita income and achieve broad prosperity. These elements are critical since ideas, innovation, and intellectual capital give rise to economic growth.

We present a broad array of data on Kentucky's economy—including information on many factors that are not necessarily economic—but still exercise an important impact on the economy. We have organized the data into twelve broad thematic areas: Agriculture, Community, Economic, Economic Security, Education, Energy, Environment, Health, Infrastructure, Innovation, Population, and Public Finance.

Many of the variables presented in the *2015 Kentucky Annual Economic Report* include data for Kentucky over many years which allows one to assess change over time. Also, we have included data on the U.S. and the twelve states considered Kentucky's economic competitors—Alabama, Georgia, Illinois, Indiana, Mississippi, Missouri, North Carolina, Ohio, South Carolina, Tennessee, Virginia, and West Virginia. This allows one to see how Kentucky compares on many dimensions of economic prowess and social well-being.

Overall, the data presented here represent a comprehensive accounting of many, although not all of the factors, affecting the state's economy. The breadth of these data demonstrates that no single factor determines the state's economic prospects—it is an amalgamation of many disparate factors which shape and determine our economic trajectory.

..... Acknowledgments

The inspiration and framework for this report rests, of course, on the foundation constructed by prior CBER staff and the previous forty-two *Annual Reports* they produced. Moreover, we have melded their tradition of academic rigor with the intellectual breadth found in the biennial reports on trends affecting Kentucky's future once produced by the staff of the Kentucky Long-Term Policy Research Center—*Michal Smith-Mello, Billie Dunavent, Amy Watts (Burke), Mark Schirmer, Peter Schirmer, and Suzanne King.*

James Sharpe provided invaluable research and editorial support, and CBER intern, *Taraneh Amoozegar*, assisted Dr. Bollinger on the economic forecast chapter. Finally, *Anna Stewart* was a dutiful proofreader.

Dan O'Hair, Dean, College of Communication and Information, provided important support for this effort. The College of Communication and Information hosts a University-wide academic program, **The Innovation Network for Entrepreneurial Thinking**, better known as iNET, to help students succeed in an entrepreneurial world and solve real world problems. iNET offers a continuum of learning opportunities to develop entrepreneurial thinking, skills and experience (iNET.uky.edu).



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Dean Harvey, Executive Director of the Von Allmen Center for Entrepreneurship, **The Von Allmen Center for Entrepreneurship**, also provided important support. This Center is the epicenter for entrepreneurship and commercialization at the University of Kentucky and in the Bluegrass Region. The Center brings together students, researchers, clinicians, mentors, service providers, and investors to create new businesses and jobs in the Commonwealth. The Von Allmen Center has been part of the Kentucky Innovation Network since its inception in 2002 (gaton.uky.edu/VACE). **Dean Harvey** is the Executive Director of the Von Allmen Center and he can be contacted at 859.257.1930 or harvey@uky.edu.



While many played a role in producing this report, the authors are solely responsible for any errors.

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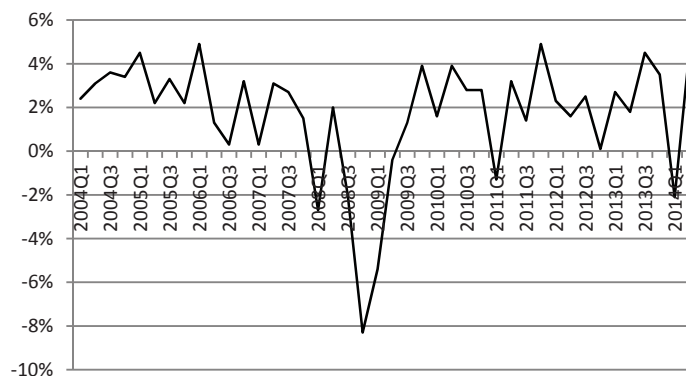
The Kentucky Economy: What Pieces Are Working?

Christopher R. Bollinger

The shutdown of the federal government in September 2013 was a watershed event that affected the national economy. While the third and fourth quarters of 2013 showed strong growth in both U.S. gross domestic product (GDP) (Figure 1) and U.S. employment levels (Figure 2), the impact of the shutdown and the fears about continued federal government problems in January of 2014 led to a disturbing first quarter where GDP declined at an annualized rate of 2.1 percent. Perhaps because this negative growth was not officially reported until revisions at the end of the second quarter, combined with some resolutions to political conflict in Washington, D.C., the second and third quarters of 2014 exhibited robust GDP growth (4.6% for the second quarter and 3.9% for the third quarter). Overall, at this writing the U.S. economy is on track for 2.4 percent annual GDP growth, in spite of the setbacks of the first quarter. Kentucky's GDP grew at a rate of 1.6 percent in 2013 (the last period for which state-level data are available). All indications are that 2014 was slightly better than 2013.

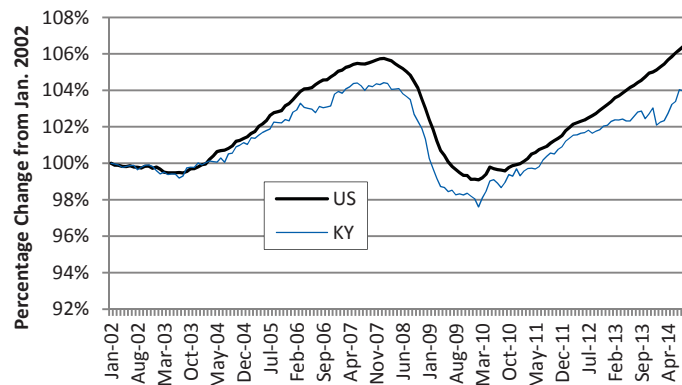
Although often maligned in the popular press, the real bright spot of 2014 was steady and relatively robust growth in employment. Figure 2 shows employment

FIGURE 1
U.S. Quarterly Percentage Change in Real GDP
(seasonally adjusted at annual rates)



Source: U.S. Department of Commerce, Bureau of Economic Analysis, Table 1.1.1.

FIGURE 2
Monthly Employment Growth, Kentucky & the U.S.
 (seasonally adjusted, total nonfarm, all employees)



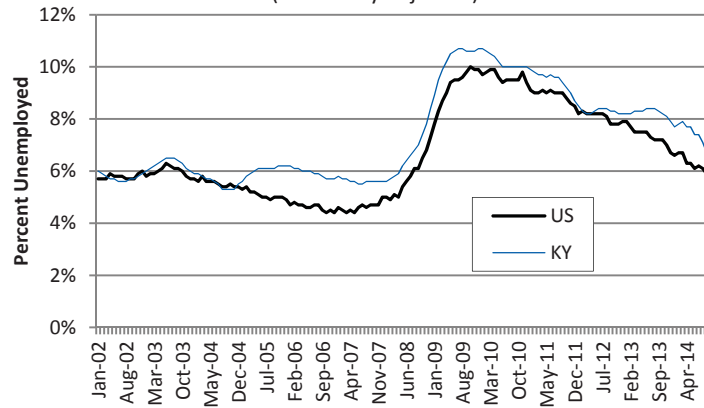
Source: Bureau of Labor Statistics

levels as a percentage of January 2002 levels. The difficult recession is apparent in the drop between April of 2007 and the employment trough in February of 2010. In April of 2014 U.S. employment reached the February 2007 peak and continued to grow. As of this writing, U.S. employment is 1.2 percent above the pre-recession peak and grew by 1.9 percent during 2014. Kentucky employment has grown since the end of the recession, although not as steadily as the U.S. (Figure 2). In October of 2014, employment in Kentucky surpassed the pre-recession high. Though lagging behind the U.S. in some ways, the robust 2.1 percent employment growth in Kentucky during 2014 is encouraging.

Unemployment has continued the decline started in October of 2009 (Figure 3). While the U.S. unemployment rate has declined with a slow but steady pace through the recovery, Kentucky experienced a period of stagnation (February 2012 through September 2013) where the unemployment rate hovered around 8.3 percent. Beginning in October 2013, though, the Kentucky unemployment rate has been declining steadily, and indeed had a remarkable third quarter dropping over a percentage point between July and October to stand only slightly higher than the U.S. rate at 6.2 percent. Kentucky's unemployment rate is typically about 1 percent higher than the U.S. rate, so it seems likely that the fourth quarter and possibly early 2015 will see slower declines for Kentucky.

Inflation continues to remain quite low. Indeed, inflation for 2014 was about 1.7 percent. This modest number masks a few important and significant changes. On the positive side, gasoline prices have fallen by 5 percent during 2014, with most of that decline coming during the second half of the year. The evidence suggests that these lower prices are due to decreased world demand as well as increased production within the U.S. as new technology has allowed access to previously untapped oil reserves. Just two short years ago, the U.S. was third in the world

FIGURE 3
Unemployment Rate, Kentucky & the U.S.
 (seasonally adjusted)



Source: Bureau of Labor Statistics

in oil production (a position it had held behind Saudi Arabia and Russia for many years). The U.S. is now poised to exceed both of those countries during 2015.

On the negative side, the drought in the Western United States has led to large increases in food prices. The food consumer price index (CPI) rose 2.9 percent during 2014, with meat rising a whopping 12.5 percent. There is reason to believe that rising food costs will continue through 2015. While the lower gas prices often affect both food production and transportation, it is unlikely we will see relief in the grocery store for some time—particularly if the drought continues.

Table 1 presents my economic forecast for 2015. I will discuss the situation and predictions for the manufacturing sector in the section below where I discuss industries. GDP growth has been increasing during each of the last four years. In 2011 it was a disappointing 1.7 percent, but each year has seen increases culminating in 2014's encouraging 2.4 percent. Many of the concerns that have hampered the recovery seem to have died away and so I predict 2.6 percent GDP growth for the U.S. Kentucky's growth tends to follow the U.S. growth, so I am somewhat more conservative in predicting a 2 percent GDP growth for the state.

Employment appears to be growing steadily now, with a commensurate decline in unemployment. Nationally, I expect the unemployment rate in late 2015 to be below 5 percent and so a 5.3 percent overall annual unemployment rate appears justified. The remarkable late 2014 rally in Kentucky employment leads me to be slightly less optimistic for Kentucky for 2015. Typically, the Kentucky unemployment rate is about 0.75 percent higher than the U.S. rate. Given that we appear to be nearing a full employment economy again, based on historic values, I expect that Kentucky's unemployment rate will end the year roughly 0.75 percent higher than the U.S. rate. Hence I predict an annual rate of about 6 percent. Commensurate with both those predictions, U.S. employment growth will need to be around 2.2

percent. I think Kentucky's recent "catch up" is important, but I predict slightly slower employment growth of around 2 percent for the state.

TABLE 1 Forecast for 2015			
	2014 Forecast	2014 Actual or Best Available	2015 Forecast
Real GDP Growth—U.S.	2.5%	2.4%	2.6%
Unemployment Rate—U.S.	6.5%	6.3%	5.3%
Inflation—U.S.	2.0%	1.7%	2.2%
Employment Growth—U.S.	2.0%	1.9%	2.2%
Growth in Manufacturing Employment—U.S.	0.5%	1.4%	0.5%
Real GDP Growth—Kentucky	2.0%	----	2.0%
Unemployment Rate—Kentucky	6.5%	7.4%	6.0%
Employment Growth—Kentucky	1.5%	2.1%	2.0%
Growth in Manufacturing Employment—Kentucky	0.6%	1.5%	0.5%

State Industry Perspective

Table 2 presents the percentage of employment in major industries in the U.S. and in Kentucky during 2013, the last year for which such detailed data are available. It also presents the earnings from major industries as a percent of total earnings for both the U.S. and Kentucky. We begin by noting that Kentucky has 1.93 million workers who earn \$78.4 billion each year; we include in this total both full- and part-time wage and salary workers, but not self-employed proprietors. Kentucky is 1.4 percent of the 142.2 million workers in the United States but only 1.1 percent of the \$7.1 trillion earned by wage and salary workers in 2013. In the United States farm employment is roughly 0.6 percent of total employment, while in Kentucky it is 0.7 percent. These percentages increase, however, when including proprietors (i.e., self-employed) along with wage and salary workers, as illustrated in the Agriculture section of the Annual Report (see pages 10-11). While Kentucky is only 1.4 percent of total U.S. employment, it has 1.7 percent of U.S. farm employment. Similarly, farm earnings in Kentucky are 0.5 percent of total earnings and 1.4 percent of total U.S. earnings from Farms. By including Agriculture and Forestry Support, the Agriculture contribution increases to 1.1 percent of total employment in Kentucky and earnings rise to 0.7 percent of total Kentucky earnings (direct data from forestry and other agriculture was very small and omitted).

The top five industries in Kentucky by employment level are Government, Health Care, Manufacturing, Retail Trade, and Accommodation and Food Services. The same five industries make up the top five in the U.S. economy as a whole, but with some interesting differences. U.S. Manufacturing is fifth, so Retail and Accommodation and Food Services each rise one spot. Government, Health Care,

TABLE 2
Employment and Earnings by Economic Sectors, Kentucky and the U.S., 2013

Description of Economic Sector	Employment			Earnings		
	Percent of Total		KY % of US	Percent of Total		KY % of US
	US	KY		US	KY	
Total Wage and Salary Employment	142.2*	1.93*	1.4%	\$7110 [†]	\$78.4 [†]	1.1%
Farm Employment	0.6%	0.7%	1.7%	0.4%	0.5%	1.4%
NonFarm Employment	99.4%	99.3%	1.4%	99.6%	99.5%	1.1%
Agriculture & forestry supt. activities	0.3%	0.4%	1.4%	0.2%	0.2%	1.5%
Mining	0.6%	0.9%	2.1%	1.1%	1.5%	1.5%
Utilities	0.4%	0.3%	1.2%	0.8%	0.6%	0.9%
Construction	4.3%	3.7%	1.2%	4.6%	4.3%	1.0%
Manufacturing	8.5%	11.9%	1.9%	10.5%	15.6%	1.6%
Wholesale trade	4.1%	3.9%	1.3%	5.6%	5.2%	1.0%
Retail trade	10.7%	10.6%	1.3%	6.2%	6.5%	1.2%
Transportation and warehousing	3.2%	4.5%	1.9%	3.2%	5.5%	1.9%
Information	1.9%	1.4%	1.0%	3.4%	1.6%	0.5%
Finance and insurance	4.1%	3.8%	1.3%	7.7%	5.7%	0.8%
Real estate and rental and leasing	1.4%	1.0%	0.9%	1.5%	0.8%	0.6%
Professional, scientific, and technical	5.8%	3.6%	0.9%	9.7%	5.0%	0.6%
Management of companies & entpr.	1.5%	1.1%	1.0%	3.3%	2.4%	0.8%
Administrative and waste mgmt.	5.9%	5.8%	1.3%	4.2%	3.8%	1.0%
Educational services	2.4%	1.7%	1.0%	1.9%	1.0%	0.6%
Health care and social assistance	12.6%	11.9%	1.3%	11.5%	12.7%	1.2%
Arts, entertainment, and recreation	1.5%	1.1%	1.0%	1.1%	0.6%	0.6%
Accommodation and food services	8.6%	8.3%	1.3%	3.5%	3.2%	1.0%
Other services, except public admin.	4.8%	4.2%	1.2%	3.1%	3.0%	1.1%
Government and government entpr.	16.9%	19.4%	1.6%	16.7%	20.1%	1.3%
State and local	13.5%	14.6%	1.5%	12.5%	13.5%	1.2%
<i>Source: Bureau of Economic Analysis</i> *millions of workers †billions of dollars						

and Manufacturing are industries with a notable share of the income both in Kentucky and the U.S. However it is more concentrated among these three in Kentucky.

Overall, Kentucky has 1.4 percent of U.S. employment but only 1.1 percent of U.S. employment income. To some degree this may reflect lower costs of living in Kentucky, but is certainly an issue worth considering. In particular when we examine the issue by industry some important concerns become clear. While Kentucky

has 2.1 percent of the U.S. employment share in mining, it only has 1.5 percent of the mining income. This indicates that the mining operations in Kentucky are lower paying than those in other parts of the country. Indeed the typical mining employee in Kentucky earns roughly 69 percent of the national average in this industry. In general, Kentuckians earn about 81.3 percent compared to the national average. Industries where the earnings per worker are closer to the national level are Agricultural and Forestry Support (108%), Transportation and Warehousing (98%), Health Care (95%), and Other Services (92%). Of these, Health Care and Transportation & Warehousing are the only sizable industries. While Health Care is 11.9 percent of employment in Kentucky, it accounts for 12.7 percent of earnings, indicating that Health Care jobs pay more than other jobs in Kentucky.

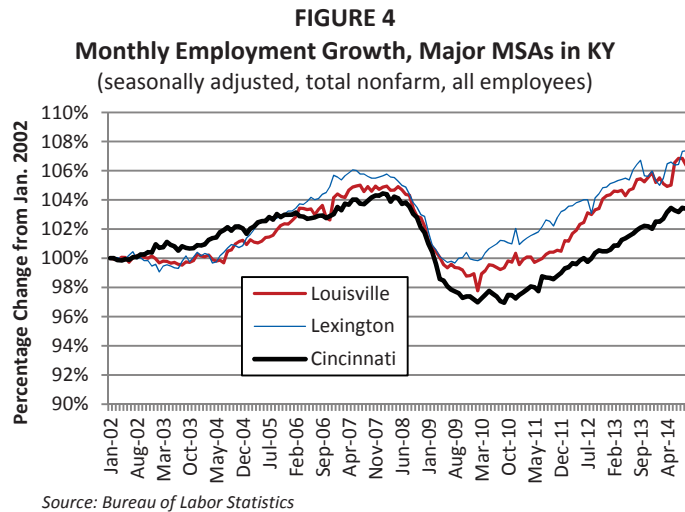
Manufacturing presents an interesting situation; the typical Kentucky manufacturing worker still earns only 86.2 percent of what manufacturing workers elsewhere earn. However, this is higher than the overall average of 81 percent. Indeed, while manufacturing accounts for 11.9 percent of employment, it produces 15.6 percent of earnings in Kentucky. This is not inconsistent with what we see throughout the U.S., which is declining employment in manufacturing while wages in the industry remain relatively high. Other research at the Center has shown that while manufacturing employment continues a 60 year-long decline in both the U.S. and Kentucky, manufacturing production (as measured by the real value of goods produced) has actually increased steadily over the same period whether measured as a level of output, per worker, or per person in the U.S.

The last year has seen strong growth in manufacturing employment in Kentucky led by Louisville and to a lesser extent Lexington. The U.S. as a whole saw 1.4 percent growth in manufacturing, much stronger than the nearly zero growth seen in 2013. Kentucky saw even stronger manufacturing growth of 1.5 percent. However, the long run overall trend is down, and employment has returned to nearly pre-recession levels. Therefore I forecast that employment growth for manufacturing, in both the state and the U.S., will be quite modest at 0.5 percent.

The Three Cities

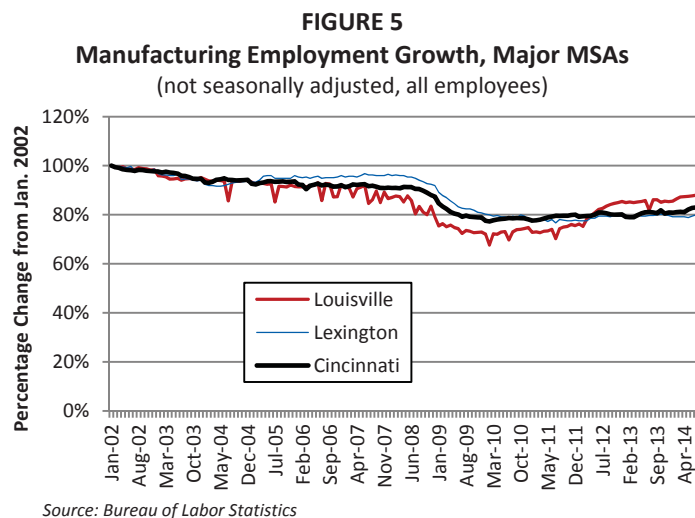
While it is important to recognize that Kentucky contains many vibrant economic areas, Cincinnati, Lexington, and Louisville are an important and key focus. The Urban Triangle constitutes 50 percent of the population, 59 percent of the employment, and 54 percent of the business establishments in Kentucky. Lexington and Louisville saw GDP growth above the national and state averages in 2013 (the last dates for availability), but Cincinnati actually had a slight contraction of -0.1 percent.

Figure 4 shows employment as a percentage of January 2002 employment through October of 2014. We see that all three cities have been generally trending upward since 2010 or early 2011. Lexington and Louisville have now returned to or exceeded the pre-recession high. Cincinnati continues to rise, but is recovering from



a deeper loss of jobs and appears to be rising slightly more slowly. Overall Cincinnati and Louisville had the most robust growth in 2014, increasing employment 1.6 percent and 1.4 percent respectively. Lexington stalled out during the middle of the year and thus posted a disappointing 0.5 percent employment growth.

Louisville's manufacturing employment grew rapidly during 2010 and especially 2011, returning nearly to pre-recession levels (see Figure 5). Lexington and Cincinnati have had slower manufacturing sector recoveries, but Lexington has a higher mix of Health Care and Education sector employment which has recovered quite quickly. Hence, Lexington and Louisville have recovered faster than Cincinnati for different idiosyncratic reasons of industry mixes. Cincinnati's manufacturing sector seems



to be turning up more strongly in the last 3 months, but only time will tell if this is a change in the trend. Overall, the three cities have vibrant economic climates that drive many of the statewide statistics simply through weight of numbers.

Conclusions

The forecast this year, with the exception of manufacturing employment growth, is more optimistic than previous years. In past years, I have presented the economic uncertainty index and conjectured that high uncertainty has led to the slow and frustrating recovery. In 2012, for example, the index started at 119 in the first quarter and rose to nearly 200 during the fourth quarter. While the second quarter of 2013 saw the index fall to about 80, it rose again sharply during the fourth quarter due to political problems such as the government shut down and the fiscal cliff. The index has now dropped considerably and during the last half of 2014 has hovered around 60. To put this in perspective, at the height of the crisis in 2008 and 2009 the index was over 300 or roughly five times as high as the current level. During the late 1990's the index averaged around 65. While I am certainly not arguing that we will see a return to the exciting growth of the late 1990's, I think the economy is well poised to begin robust growth.

OVERVIEW

A DISTINGUISHED GROUP OF CONCERNED CITIZENS PUBLISHED A report in 1949 entitled *Kentucky on the March*, which was designed to stimulate actions that would improve living conditions in the state. This group, which called itself the Committee for Kentucky, was alarmed at the state's low national ranking on a number of educational, economic, demographic, and social indicators. What made the across-the-board low rankings so troubling was that in the early twentieth century Kentucky had been viewed as a national leader in several social, cultural and economic areas.

The group's first goal was to reach a consensus on the major problems in Kentucky. They engaged "an important group of Kentuckians" and asked them to prioritize the state's biggest problems. Agriculture was at the top of the list, followed by education and then health. This was the 1940s, and according to the report, "seventy per cent [sic] of our economy is agricultural." Many rural areas lacked roads, electricity, nearby access to water, and farm incomes were generally low. In 1940 average cash farm income per farm family was \$12 per week, which is just over \$200 in today's dollars.

A 2013 study conducted in the UK College of Agriculture found that the total economic impact of agriculture on the state's economy was \$46.3 billion and contributed to 263,000 jobs. The reality, however, is that the agricultural sector accounts for about 2 percent of Kentucky's gross domestic product and has been steadily declining for the last several years. The Bureau of Economic Analysis estimates farm employment in Kentucky at 86,000, which is about the same number of manufacturing jobs in five of Kentucky's 120 counties: Jefferson, Fayette, Boone, Warren and Scott. There are about 231,000 manufacturing jobs statewide.

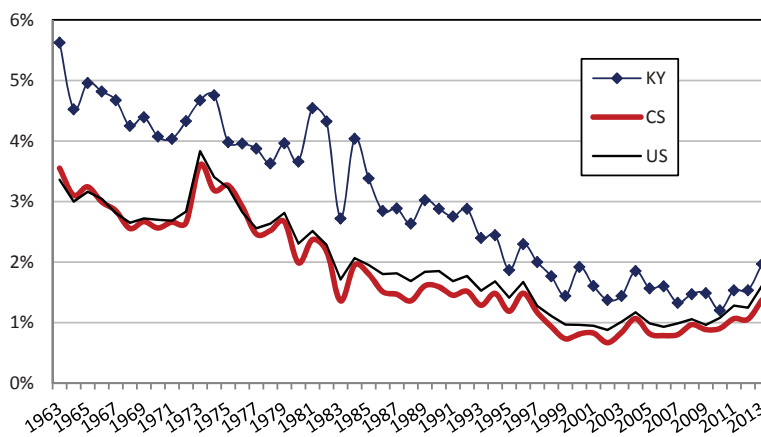
In recent years a number of studies have found that agricultural commodities and related activities can have a significant economic impact, with studies of the equine and bourbon industries, for example, showing economic impacts in the billions of dollars. While some form of agriculture enterprise is present in every Kentucky county, many rural communities are relatively more dependent on agriculture for jobs and income.

The Shaping Our Appalachian Region (SOAR) working group on agriculture, community and regional foods, and natural resources is aspiring to leverage the agricultural sector in Eastern Kentucky to create jobs and increase incomes. Even though its contribution to the state economy has been generally decreasing, the impact of agriculture in a local or regional economy can be significant.

AGRICULTURE AND GDP

Kentucky's economy has experienced a lot of changes over the last fifty years. The move away from agriculture is one of them. In 1963 agriculture accounted for about 5 percent of Kentucky's gross domestic product (GDP), compared to about three-and-a-half percent for the U.S. and competitor states. Within the Agriculture, Forestry, Fishing, and Hunting sector, the Bureau of Economic Analysis (BEA) includes "establishments primarily engaged in growing crops, raising animals, harvesting timber, harvesting fish and other animals from a farm, ranch or their natural habitats." The BEA notes that "these establishments are often described as farms, ranches, dairies, greenhouses, nurseries, orchards or hatcheries... (and) the sector includes two basic activities: crop and animal production (farms) and forestry, fishing, and related activities." In 2013 this economic sector accounted for 2 percent of Kentucky's gross domestic product, compared to 1.4 percent in the U.S. and 1.6 percent in the competitor states. South Dakota has the highest percentage among the states with agriculture accounting for 13.7 percent of its gross domestic product while Rhode Island has the lowest at 0.2 percent.

Agriculture and Related Activities in Kentucky, Competitor States, and the U.S., 1963 to 2013
(agriculture, forestry, fishing & hunting as a percentage of GDP)

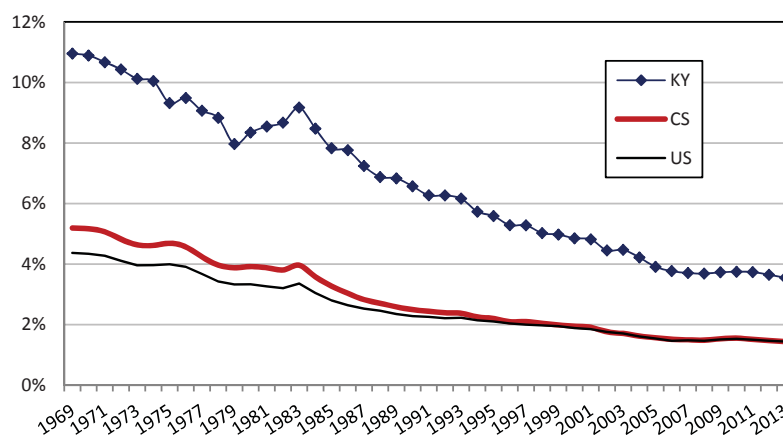


Source: U.S. Department of Commerce, Bureau of Economic Analysis

FARM EMPLOYMENT

Farm employment is the “number of workers engaged in the direct production of agricultural commodities, either livestock or crops; whether as a sole proprietor, partner, or hired laborer.” The BEA estimates Kentucky’s farm employment at 85,631, which is around 3.6 percent of total employment or jobs in the state. As one can see on the chart below, this is much higher than either the competitor states or the U.S., both of which are estimated at 1.4 percent. While Kentucky’s farm employment is high compared to other states and the nation, it has decreased precipitously since the late 1960s when it was at about 11 percent. Kentucky’s farm employment has been under 4 percent since 2005 and has remained more or less stable since that time. These percentages are higher than those discussed in the Forecast section of this report because here we include proprietors (i.e., self-employed) along with full- and part-time wage and salary workers.

Farm Employment as a Percentage of Total Employment, Kentucky, Competitor States, and the U.S., 1969 to 2013
(percentage of total jobs, includes full- and part-time employment)

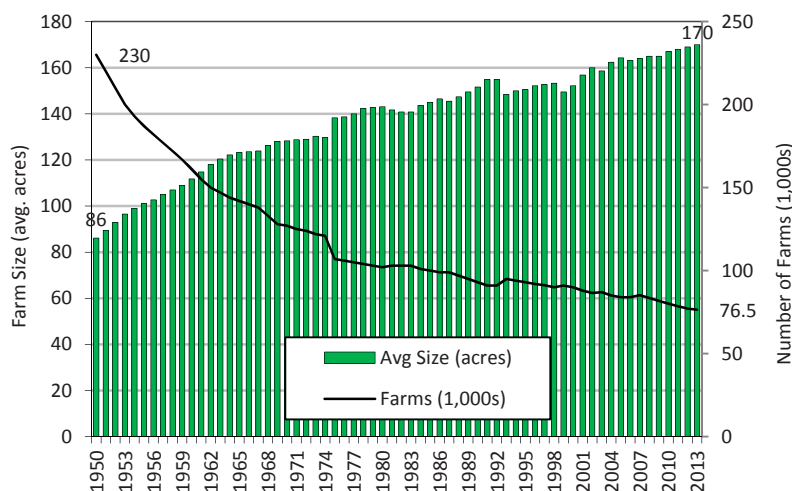


Source: U.S. Department of Commerce, Bureau of Economic Analysis

FARMS

The family farm has nearly become a quaint ghost of Kentucky's past. Over the last half century, two major trends have transformed the state's countryside: the consolidation of small, family-owned farms into larger enterprises; and the conversion of agricultural land to urban (or suburban) uses. As seen here, roughly one-third as many farms exist today as there were in 1950 while the average size of Kentucky's farms has doubled. According to the 2012 Census of Agriculture, which is conducted every five years by the U.S. Department of Agriculture, Kentucky experienced the largest decrease in farmland among the states from 2007 to 2012. It is likely, however, that much of the decrease in farmland is due to farmland going idle rather than transformed through residential, industrial, or commercial development. Yet, during this period the number of farms decreased from 85,260 in 2007 to 77,064 in 2012. Most of the farms in Kentucky are owned by an individual or a family (90%), and 43 percent of Kentucky farmers spend at least 200 days a year off the farm working in other jobs.

Number of Farms and Average Farm Size, Kentucky, 1950 to 2013

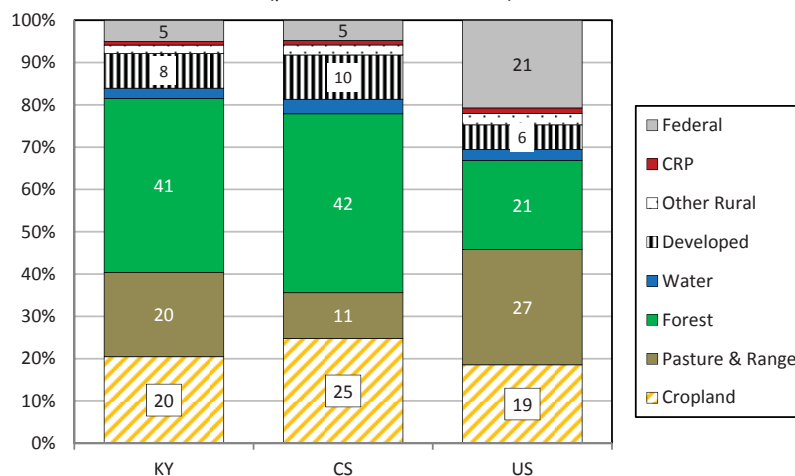


Source: Kentucky Department of Agriculture & USDA

LAND USE

The 2010 National Resources Inventory (NRI) is the most recent in a series of natural resource inventories conducted by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS); it provides a consistent framework back to 1982. These data provide insights on the status, condition, and trends of land, soil, water, and related resources on the country's non-Federal lands. Non-Federal lands include privately owned lands, tribal and trust lands, and lands controlled by state and local governments. The chart below shows that the vast majority of land in the U.S. falls into one of three categories: cropland, forest, or pasture/range. In Kentucky, these three categories account for 81 percent of the total land area; this is a higher percentage than the competitor states and the U.S. Forest accounts for the largest category in Kentucky, 41 percent. Approximately 8 percent of Kentucky is "developed," compared to 10 percent in the competitor states and 6 percent in the U.S. When thinking about Kentucky's physical environment, factors that affect trees and forests—whether as a by-product of economic activity, urban development, or invasive species—have the potential to profoundly influence the aesthetic qualities of Kentucky's natural beauty.

**Major Uses of Land, 2010,
Kentucky, Competitor States, and the U.S.**
(percent of total land area)

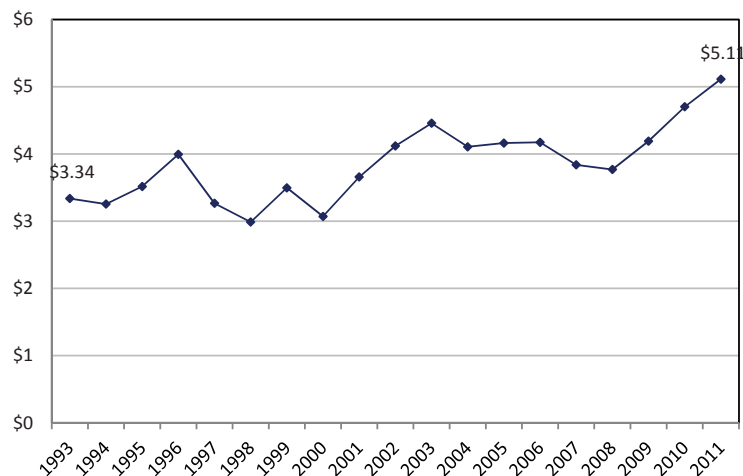


Source: U.S. Department of Agriculture, National Resources Inventory

VALUE-ADDED FOOD PRODUCTION

While Kentucky's farm traditions have long yielded significant economic benefits to the state, the development of more refined, downstream products that use these raw materials holds the promise of even greater returns. Salsa, not tomatoes, is an example of a value-added food product that can enrich and sustain a farm economy. In 2011 valued-added food production in Kentucky was \$5.1 billion (in constant 2014 \$s), representing a marked increase from \$3.34 billion in 1993. There are any number of value-added food products—from honey to wine to jerky to jam—that provide opportunities to enrich individuals as well as communities and generate new economic opportunities that help sustain Kentucky's rural areas.

Value Added to Food Products in Kentucky, 1993-2011
(constant 2014 billions)



Source: U.S. Census, Annual Survey of Manufacturers.

FARM COMMODITIES

The past two-and-a-half decades have seen significant changes in Kentucky's agricultural profile. In 1990 tobacco was the state's signature commodity and constituted nearly a quarter of Kentucky's farm receipts (23.8%). By 2000 tobacco ranked second and accounted for 18.5 percent of farm receipts, and by 2012 it had declined to sixth and 7.3 percent of Kentucky's total farm receipts. While tobacco's value has dropped precipitously, Kentucky's other major crops—corn, soybeans, hay, and wheat—have all shown considerable improvement. The most dramatic growth, however, has been poultry—now the state's top farm commodity. In 1990 farm chickens, broilers (chickens raised for food), and chicken eggs constituted less than 1 percent of total farm receipts (0.82%). In 2012 these three poultry commodities accounted for 18.6 percent of the \$5.3 billion in total farm receipts. The dramatic swings in receipts for Kentucky's various farm products underscores the necessity of agricultural diversity, so farmers' fortunes do not rise and fall based on the market for a single commodity.

Kentucky's Leading Farm Commodities, 2012		
RANK	COMMODITY	VALUE OF RECEIPTS (thousands)
1	Broilers	866,600
2	Corn	828,795
3	Horses and mules	810,000
4	Soybeans	741,325
5	Cattle and calves	656,711
6	Tobacco	384,886
7	Dairy products, Milk	219,582
8	Wheat	201,341
9	Hay	142,373
10	Chicken eggs	116,078
11	Hogs	115,409
12	Farm chickens	2,399
13	Aquaculture	2,289
14	Honey	811
15	Wool	52
Source: USDA Economic Research Service.		

OVERVIEW

CONCEPTS LIKE COMMUNITY DEVELOPMENT AND ECONOMIC development are linked so tightly the terms are frequently used interchangeably. Economic activities take place in our communities, so characteristics that measure community connections, strengths and weaknesses, and resiliency are vital for understanding economic conditions and future economic prospects.

Indeed, several quality-of-life factors are included on the *28th Annual Survey of Corporate Executives and Consultants on Site Selection*, with 81 percent of the respondents indicating that a low crime rate, for example, is either “important” or “very important” for industrial or corporate siting decisions. By comparison, tax exemptions as well as energy availability and costs were ranked similarly.

Having a strong and robust civil society has many benefits. As was noted in a 2010 report from the University of Kentucky Nonprofit Leadership Initiative, *More than Charity*, “Nonprofits provide access to the arts, protect the environment, feed the hungry, assist the disabled in finding meaningful employment, provide affordable mental health services, teach the illiterate to read, provide quality child care for working parents and hundreds of other services that strengthen our communities and enhance our quality of life.”

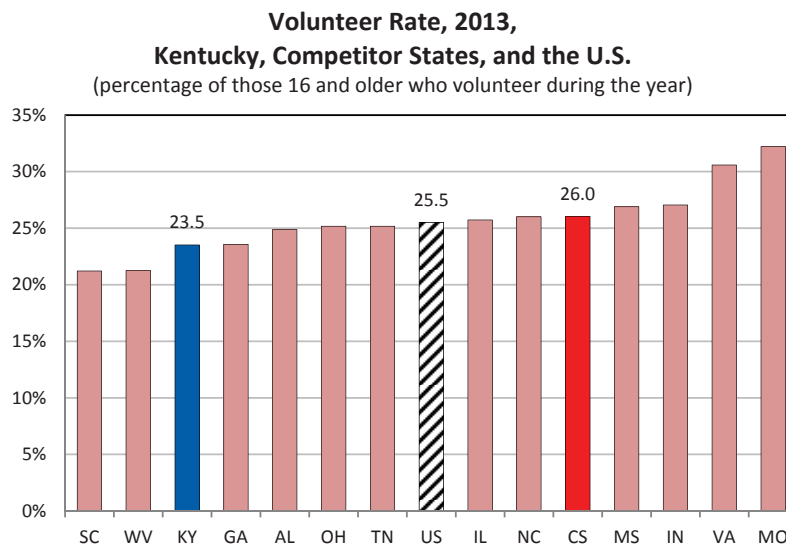
Measuring a concept as amorphous as community strength and social capital is difficult. Nonetheless, on many measures of community strength Kentucky is on par with or better than the national average, including the crime rate, levels of trust, and feelings of emotional support and life satisfaction. Conversely, national data show that our volunteer rates, hours volunteered, charitable giving, and number of nonprofits lag the national average.

Because of ever-present budget constraints, it is likely that governments will continue to search out community-based organizations, nonprofits, businesses and citizens to forge partnerships and relationships to meet new challenges—and for good reason. Over the years, research has shown that high levels of community-level civic engagement are associated with higher levels of economic prosperity. Civil society—volunteerism—can help address problems such as poverty, illiteracy, and drug abuse that the public and private sectors have failed to eradicate.

Addressing issues like illiteracy and improving the health of the workforce can improve a community’s economic development prospects, and it will likely become increasingly important in the future for Kentucky to develop a foundation of strong social capital to help achieve vital economic development objectives.

VOLUNTEER RATE

Some studies have linked participation in civil society—volunteering for example—to higher levels of community prosperity, higher achievement in schools, and improved individual health. Volunteers can tackle problems such as poverty, illiteracy, and drug abuse that public or private sectors have not adequately addressed—making a community more attractive for economic development. Some research even suggests that members of communities with high levels of civic participation enjoy better health and live longer. Just under one-quarter of Kentucky’s population 16 and older, 23.5 percent, volunteered at some point during 2013. There is not a statistically significant difference between Kentucky and the U.S. average (25.5%). As is evident by the figure below, there is actually little difference between the competitor states, which range from 21.2 percent in South Carolina to 32.2 percent in Missouri. Missouri and Virginia are the only two states shown in the figure that are statistically different from Kentucky.

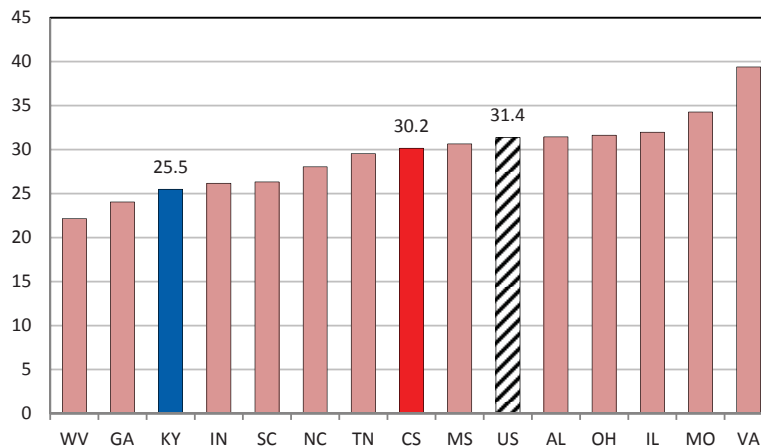


Source: Current Population Survey, September 2013 supplement

VOLUNTEER HOURS

Based on data from the Corporation for National and Community Service, Kentucky had over 857,000 volunteers in 2011 who contributed nearly 83 million hours of service, or around 24.5 hours per resident. The total annual estimated value of volunteer service in Kentucky in 2011 was between \$1.5 and \$1.8 billion, which is based on the Independent Sector's annual estimate of the value of a volunteer hour, which for Kentucky was \$17.91 in 2011. The average number of volunteer hours in Kentucky increased to 25.5 in 2013, but was substantially lower than the competitive states (30.2) and US (31.4) averages. It is clear, however, that volunteers, community groups, and nonprofit organizations add social and economic value to Kentucky's economy and society.

**Volunteer Hours, 2013,
Kentucky, Competitor States, and the U.S.**
(average hours served in a year per resident 16 and older)

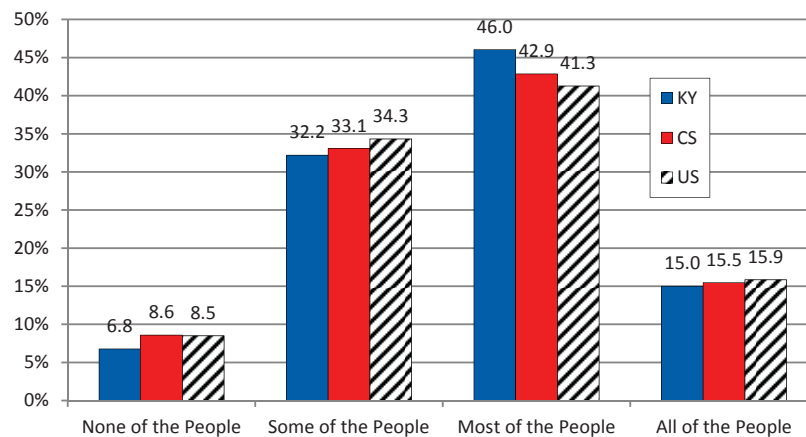


Source: Current Population Survey, September 2013 supplement

TRUST

High levels of trust in a community help bind people together to work for the greater good in a host of ways. Trust has been called the lubricant that facilitates charitable acts, community development, and everyday commerce. When asked whether they trust people in their neighborhood, 46 percent of Kentuckians indicated “most of the people,” and 15 percent said “all of the people.” With 61 percent showing a high level of trust toward their neighbors, the Kentucky percentage is quite high—but the difference between Kentucky, the competitor states, and the U.S. is not statistically significant. Extending the question to include all people, not just neighbors, Kentuckians have expressed even higher levels of trust compared to the typical American. Surveys sponsored by the Kentucky Long-Term Policy Research Center found that most Kentuckians, approximately 55 percent in 2008, said that, generally speaking, you can usually trust people. By comparison, the percentage of Americans expressing this belief has been 20 to 25 percentage points lower going back several years. For example, in 2008 approximately 32 percent of U.S. adults said that, generally speaking, most people can be trusted.

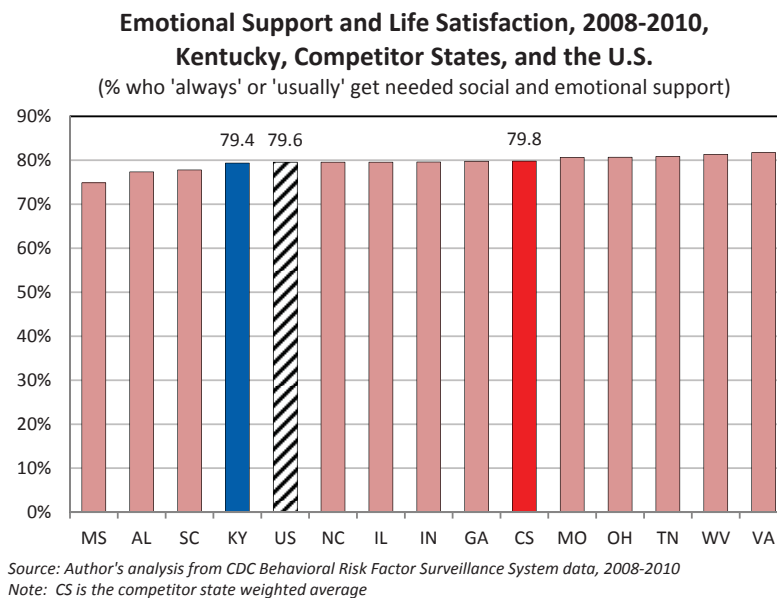
Trust People in Neighborhood, 2011
Kentucky, Competitor States, and the U.S.
 (percent expressing trust)



Source: Authors' analysis of November 2011 Current Population Survey data

SOCIAL AND EMOTIONAL SUPPORT

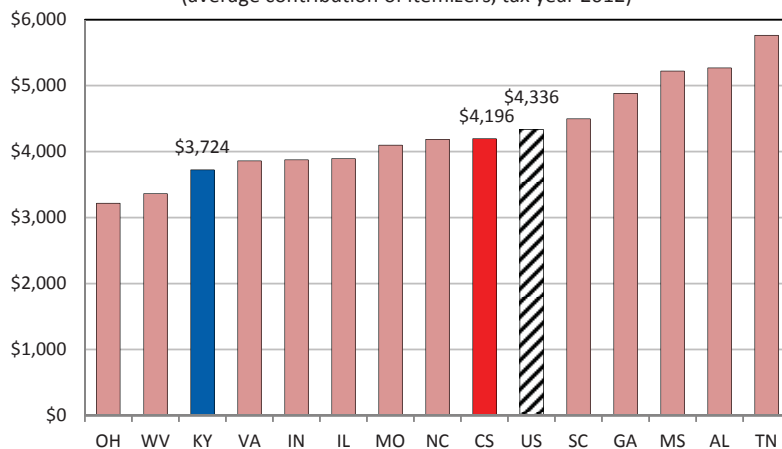
Research shows that feelings of social isolation are associated with poor health outcomes—which can have an important effect on one’s productivity. One measure of social isolation and community support is from the Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System (BRFSS): *How often do you get the social and emotional support you need?* In most states around 8 out of 10 adults indicate they always or usually get the needed social and emotional support. The Kentucky percentage of 79.4 is not statistically different from the U.S., North Carolina, Illinois, Indiana, Georgia, or the competitor state averages.



CHARITABLE CONTRIBUTIONS

America's giving spirit continued to rise in 2013 with giving by individuals increasing by an estimated 4.4 percent in 2013 (an increase of 3 percent adjusted for inflation) according to *The Giving Institute*. At \$241 billion, charitable giving by individuals in 2013 was equal to about 72 percent of the estimated total contributions from all sources, \$335 billion. Nationally the average charitable contribution among those who itemize deductions—which is about a third of all taxpayers—equaled \$4,336 for the 2012 tax year, compared to \$3,724 in Kentucky. Among the competitor states, Tennessee has the highest amount at \$5,786 and Ohio the lowest at \$3,218. Obviously those who do not itemize deductions on their tax returns also make charitable contributions, but it is estimated that itemizers account for about 83 percent of all charitable contributions from individuals.

**Charitable Contributions in 2012,
Kentucky, Competitor States, and the U.S.**
(average contribution of itemizers, tax year 2012)

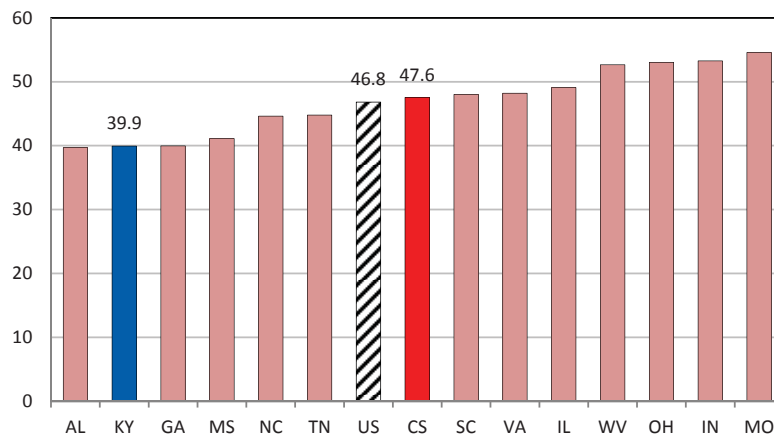


Source: Internal Revenue Service, *Statistics of Income, Historical Table 2*
Note: CS is the competitor state weighted average

NONPROFITS

Like the number of volunteers in a community or the amount of money donated to charity, the number of nonprofits is an indicator of the level of organized community action. Nonprofits also have a direct economic impact. According to data from the Urban Institute and the Independent Sector, nonprofits employed 13.7 million individuals or approximately 10 percent of the country's workforce in 2010. A 2010 report issued by the University of Kentucky Nonprofit Leadership Initiative found that the state's 20,000 nonprofit organizations had a similar economic impact in Kentucky. Moreover, nonprofit employment in the U.S. grew an estimated 18 percent between 2000 and 2010, faster than the overall economy. The average number of nonprofits per 10,000 population in the U.S. is 46.8, compared to Kentucky's 39.9. Among the competitor states, only Alabama has fewer nonprofits—39.7 per 10,000 population. At 54.6 per 10,000 population, Missouri has the most among competitor states. These numbers on nonprofits do not include churches, mosques, synagogues, temples, or other similar religious entities. As of September 2014, the Urban Institute, National Center for Charitable Statistics, reported that Kentucky had 17,293 registered nonprofit organizations.

**Registered Nonprofit Organizations, 2014,
Kentucky, Competitor States, and the U.S.**
(per 10,000 population)



Source: Internal Revenue Service, Exempt Organizations Business Master File (2014, Jul) & U.S. Census, 2013
Note: CS is the weighted average of the competitor states

CRIMINAL OFFENSES

Any discussion of community would be incomplete without consideration of the role of crime, which can instill fear, undermine trust, and fray connections—and impact economic development decisions and outcomes. The table below shows Kentucky’s Group A offenses for 2012 and 2013. Note, however, that missing from these totals is a significant number of offenses from Jefferson County. As a matter of fact, no offenses reported by the Louisville Metro Police Department are included because of the way the department categorizes crime statistics. Nonetheless, the table illustrates the relative distribution of various crimes in Kentucky as well as the annual percent change. Just over 72 percent of offenses fall into one of four categories: larceny/theft (29.5%), drug/narcotic (19.8%), assault (13.7%), or burglary/breaking and entering (9.5%). The total number of offenses decreased by 3.9 percent from 2012 to 2013.

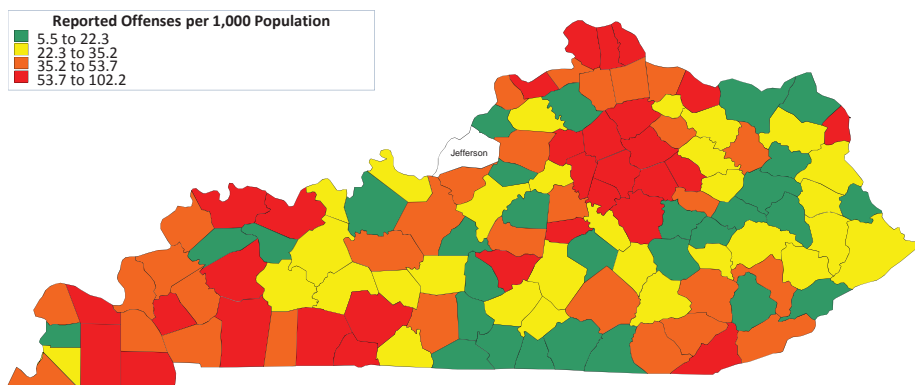
Kentucky Criminal Offense Data, 2012-2013 (Group-A Offenses)				
Classification	Offenses Reported			
	2012	2013	% Change	% Total
Arson	488	436	-10.7%	0.2%
Assault Offenses	28,517	28,133	-1.3%	13.7%
Bribery	101	65	-35.6%	0.0%
Burglary/Breaking and Entering	22,356	19,422	-13.1%	9.5%
Counterfeiting/Forgery	7,545	6,980	-7.5%	3.4%
Destruction/Damage/Vandalism of Property	21,045	19,354	-8.0%	9.5%
Drug/Narcotic Offenses	38,724	40,614	4.9%	19.8%
Embezzlement	-	-	-	0.0%
Extortion/Blackmail	28	30	7.1%	0.0%
Fraud Offenses	8,455	7,614	-9.9%	3.7%
Gambling Offenses	10	28	180.0%	0.0%
Homicide Offenses	277	244	-11.9%	0.1%
Kidnapping/Abduction	545	603	10.6%	0.3%
Larceny/Theft Offenses	62,799	60,442	-3.8%	29.5%
Motor Vehicle Theft	4,669	4,299	-7.9%	2.1%
Pornography/Obscene Material	3,702	3,735	0.9%	1.8%
Prostitution Offenses	234	222	-5.1%	0.1%
Robbery	2,149	1,944	-9.5%	0.9%
Sex Offenses, Forcible	5,468	4,488	-17.9%	2.2%
Sex Offenses, Nonforcible	385	549	42.6%	0.3%
Stolen Property Offenses (e.g., Receiving)	3,401	3,348	-1.6%	1.6%
Weapon Law Violations	2,036	2,183	7.2%	1.1%
Total Group-A Offenses	212,934	204,733	-3.9%	100%

Source: Crime in Kentucky, 2013, Kentucky State Police

CRIMINAL OFFENSE RATE BY COUNTY

This map shows the number criminal offenses per 1,000 population at the county level. Unsurprisingly, Kentucky's metro areas have the highest rates. The map shows there is incomplete data for Jefferson County. The remaining 119 counties are categorized into four roughly equal groups. The county with the lowest rate is Clinton with 5.9 while Fayette is the highest at 101.2 offenses per 1,000 population. Kentucky's overall rate is 46.6. From 1995 to 2010, the crime rate for Part I offenses—which are slightly different from Part A crimes shown in the map, but include murder, rape, robbery, assault, burglary, larceny, auto theft, and arson—decreased among Kentucky's 35 urban counties from 43.5 per 1,000 population to 34.9, a decrease of 20%. Likewise, the rate for the 25 slightly rural counties decreased from 26.9 to 22.9, a 15% decrease. Among Kentucky's 60 mostly rural counties, however, the rate remained more or less stable with a rate of 15.7 in 1995 and 15 in 2010—a 4% decrease. There were 1,456 arsons reported statewide in 1995 but they are not included in the 127,621 county-level Part I offenses. Arsons are included in the 2010 data.

Group-A Offenses in Kentucky, 2013

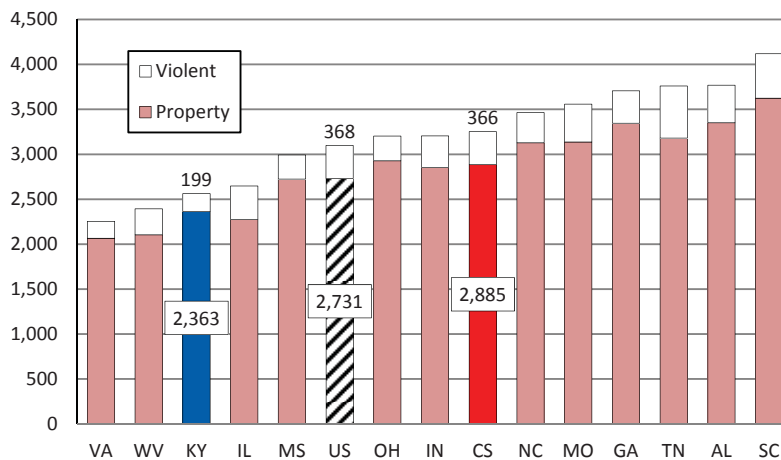


Source: Author's calculations from Kentucky State Police, *Crime in Kentucky -- 2013*

CRIME RATE

The number of reported incidents of property crime, such as burglary, larceny-theft, and motor vehicle theft, has declined in the United States every year since 2007. Kentucky has a relatively low crime rate. The number of reported property crimes per 100,000 persons in Kentucky is 2,363 (2013), a rate lower than all competitor states except for Virginia, West Virginia, and Illinois. Reports of violent offenses, including murder and nonnegligent manslaughter, forcible rape, robbery, and aggravated assault, also were well below the national rate here in 2013 and below the rates reported by eleven of twelve competitor states (Virginia's rate is lower). Kentucky's comparatively low crime rate remains a strong asset that contributes to a sense of well-being and trust which, in turn, helps create caring places that nurture productive lives.

**Crime Rate,
Kentucky, Competitor States, and the U.S., 2013**
(rate per 100,000 persons)

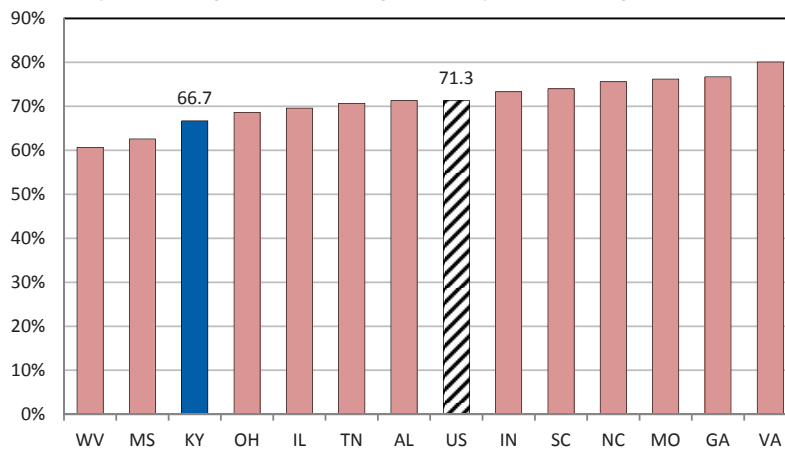


Source: US Federal Bureau of Investigation

NEIGHBORHOODS

The incidence of crime is one way to measure the quality of a neighborhood. Other factors that detract from neighborhood quality include graffiti, dilapidated housing, and litter. To gauge the quality of neighborhoods in which children live, the National Survey of Children's Health posed several questions to survey respondents, including "In your neighborhood, is there litter or garbage on the street or sidewalk?" "Does the neighborhood contain poorly kept or dilapidated housing?" and "In your neighborhood is there vandalism such as broken windows or graffiti?" The numbers in the chart below are estimates of the percentage of children living in neighborhoods where none of these three detracting elements are present. While not much lower than the U.S. percentage (71.3%), Kentucky's percentage (66.7%) is statistically significantly lower. Virginia has the highest value among the competitor states (80.1%) and West Virginia the lowest (60.7%).

Children Living in Neighborhoods Without Detracting Elements, KY, Competitor States, and the U.S., 2011
(percent living in areas with no graffiti, dilapidated housing, or litter)



Source: 2011 National Survey of Children's Health

OVERVIEW

WE PRESENT OUR 2015 ECONOMIC FORECAST FOR KENTUCKY in the first section of this report. There we discuss our expectations for the future trajectory of gross domestic product, employment, and inflation for the U.S., Kentucky, and the state's major metropolitan areas. As was reported in December 2014 by the Kentucky Office of Employment and Training, Kentucky's seasonally adjusted preliminary unemployment rate dropped to its lowest level in more than six years in November 2014 to 6 percent. Because many economic trends are moving in a positive direction for the state, our 2015 forecast is more optimistic than it has been for many years.

This sense of optimism is shared broadly, as demonstrated by the most recent Gallup Economic Confidence Index which has displayed steady improvement through most of 2014. The Index is the average of two components: how Americans view current economic conditions and whether they feel the economy is getting better or worse.

In this section we refocus the lens on the wider economic landscape and present data on a broader collection of economic indicators. We describe how Kentucky's economy has gradually changed, such as the movement away from goods-production and toward service-providing—something that has important implications for tax policy in Kentucky. We also present data on the extensive and continuing reliance on transfer payments—especially in Kentucky's 60 mostly rural counties, the likelihood that individuals will remain in the labor force longer, the growing importance of international trade and foreign direct investment, the consistently growing disparity in wages between urban and rural regions, and the declining fortunes of the coal industry.

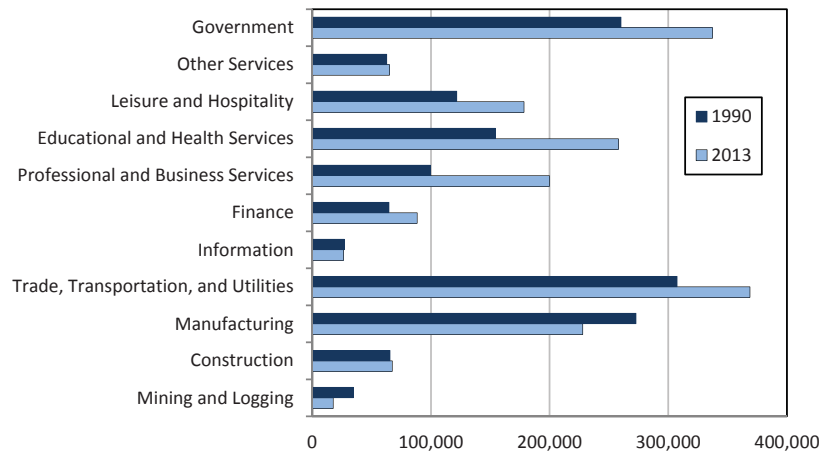
Despite all the economic change, a lot has stayed the same. Incomes, for example, have not gained on the national average—especially earned income, and housing prices have not been through the extreme boom-and-bust cycle felt nationally so the state's foreclosure inventory remains somewhat lower. Finally, despite the improving economic conditions, wages have remained stagnant, continuing the economic struggles for many middle-class households.

These data show that economic change frequently travels along a gradual glide path and unfolds over many years. These indicators also show that Kentucky lags both the competitor states and the U.S. on many important economic indicators. Together these trends show that our economic path does not typically change direction quickly and that transformational progress will be required to gain ground on the U.S. and competitor states.

EMPLOYMENT BY SECTOR

Kentucky's economy has changed since 1990. There were, for example, about 364,000 more people employed in 2013 compared to 1990—an increase of 25 percent. Over the same time period Kentucky's population increased around 19 percent. While the overall number of jobs increased, the distribution of employment among these eleven major sectors changed significantly—reflecting the fundamental forces affecting all states. Two sectors lost a significant number of workers during this period—manufacturing, which had about 45,000 less workers in 2013 (a 16% decline) and mining and logging, which lost around 17,000 jobs (a 49% decline). Conversely, the largest increases in employed occurred in educational and health services (103,700 more jobs—67% increase), professional and business services (100,300 more jobs for an increase of 101%), government (77,000 more jobs—30% increase), trade, transportation, and utilities (61,400 more jobs—20% increase), leisure and hospitality (56,700 more jobs—47% increase), and finance (23,700 more jobs—37 percent increase). There was not a significant change in the number of employed individuals in the information, construction, and other services sectors.

**Employment in Major Economic Sectors, Kentucky
1990 and 2013**

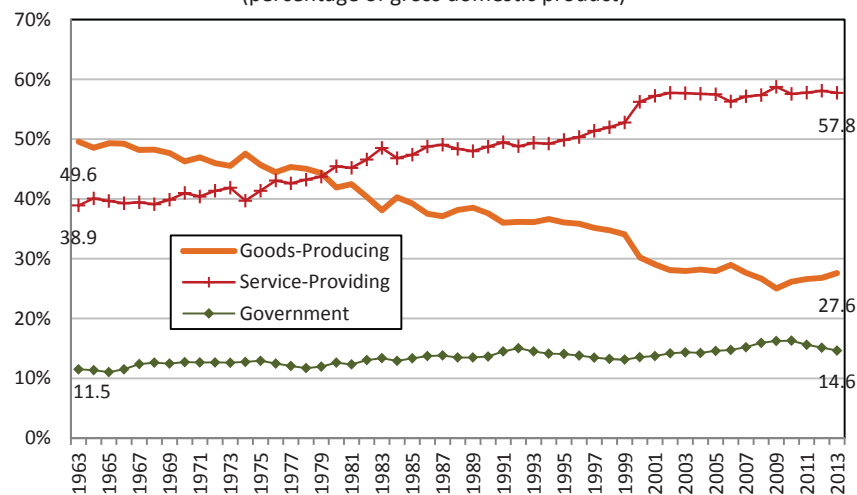


Source: U.S. Department of Labor, Bureau of Labor Statistics

TRANSITION FROM GOODS TO SERVICES

Economic activity in Kentucky has been changing for the last several decades. Specifically, economic activity has been shifting away from the production of goods and toward the provision of services. The data in this figure illustrates the major sectors in Kentucky's economy as components of the total state gross domestic product (GDP). In the early 1960s services accounted for about 40 percent of Kentucky's economic output and goods amounted to about 50 percent. However, around 1980 the provision of services contributed more to the state's economy than the production of tangible goods. And now services account for nearly 58 percent of Kentucky's economy while goods amount to about 28 percent. Government has increased as a percentage of the economy during this time period too, growing from 11.5 to 14.6 percent. Changes in consumption patterns have followed a similar trajectory. As the state's economy and consumption tilt away from goods and toward services, the sales and use tax base has slowly diminished. This is because most services, such as haircuts or automobile mechanic labor, are not subject to the sales tax. The result has been a gradual reduction in the elasticity of the sales and use tax—still an important source of revenue for the state.

**Goods, Services, and Government,
Kentucky Gross Domestic Product, 1963-2013**
(percentage of gross domestic product)



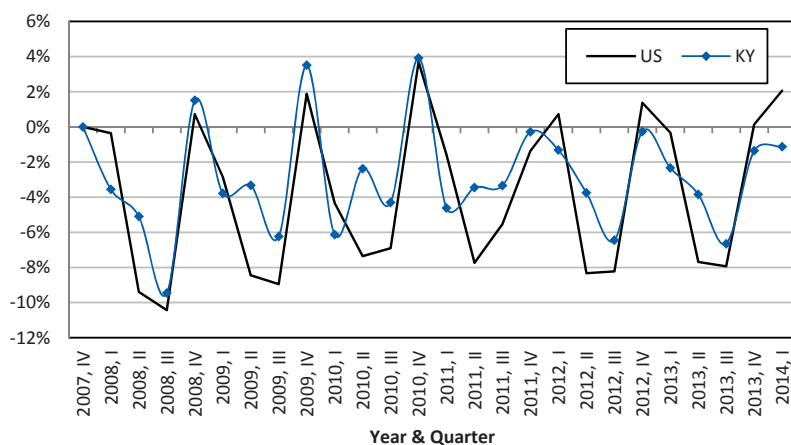
Source: Bureau of Economic Analysis

AVERAGE WEEKLY WAGE

The peak of the last economic expansion was in the final quarter of 2007—the beginning point on the graph below. Average wages have increased since then, but once wages are adjusted for inflation average wages are at about the same level they were seven years ago. Average weekly wages in the first quarter of 2014 were \$811 in Kentucky, which is significantly lower than the U.S. average of \$1,027. Comparisons through this time period are best made quarter-to-quarter since seasonal variations exercise a significant impact on average wages; this is due to an influx of relatively lower paid workers during the late spring, summer, and early fall (e.g., service industry associated with seasonal tourism and some lower skilled construction during the warm weather months). The trough of the Great Recession was during the second quarter of 2009. Average wages in the final quarter of 2009 and 2010 increased above the 2007 level, but have stalled out since then.

**Average Weekly Wage, Kentucky and the U.S.,
Percentage Change Since 2007**

(change calculated on 2014 constant \$)



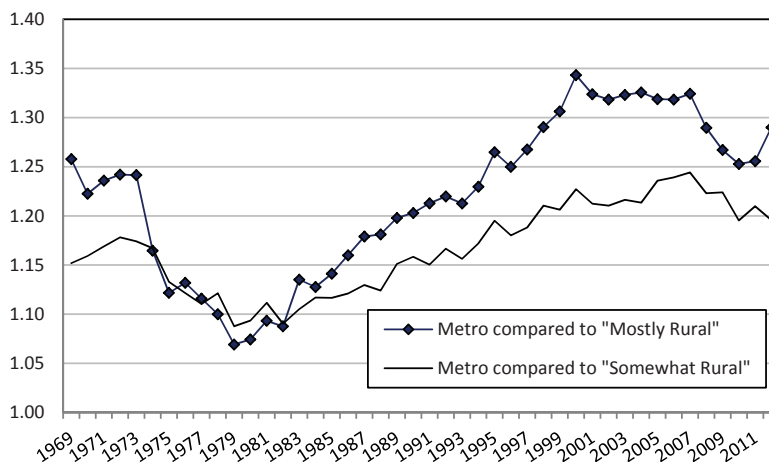
Source: U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages (total, all industries, total covered, all establishment sizes)

WAGES

This figure illustrates the gap in wages between Kentucky workers in metro counties and those in “slightly rural” and “mostly rural” counties. Going back to 1969, wages in metro areas have been consistently higher than those in rural counties—especially Kentucky’s 60 mostly rural counties. In 2012, for example, wages in metro counties were 29 percent higher than those in mostly rural counties and 20 percent higher than wages in somewhat rural counties. The rising wage differential between the 35 so-called metro counties and rural counties increased steadily from the late 1970s to 2000. This trend did not change much until the Great Recession. The trend reversed in 2007, with wages in metro counties disproportionately affected by the recession. In 2012, however, wage increases in metro counties increased the gap between them and mostly rural counties. Based on his studies of rural communities across America, economist Mark Drabenstott outlined an approach over a decade ago for rural America to increase its economic prospects. His framework for improving rural prosperity has relevance for Kentucky: think and act regionally; find a new economic niche in high-value knowledge industries that leverage the region’s strengths; and place a premium on homegrown entrepreneurs.

Wage Ratio in Kentucky by Geographic Area, 1969-2012

(Ratio Between Beale Codes 9-8-7, 6-5-4, and 3-2-1)

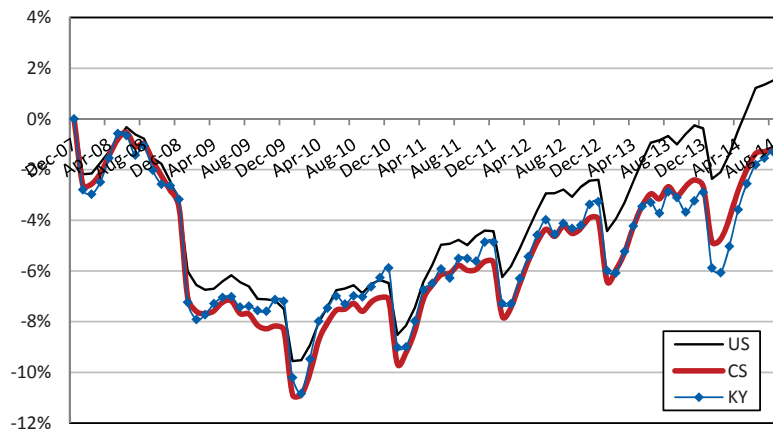


Source: Bureau of Economic Analysis, CA34, Wage and Salary Summary

JOB GROWTH

The National Bureau of Economic Research has placed the peak of the last economic expansion in December 2007 and the trough of the Great Recession in June 2009. In that 18 month period Kentucky lost nearly 110,000 jobs or about 7 percent of its total. By comparison, the U.S. job total was down 6.2 percent and the competitor states lost 7.2 percent. This was not, however, the low point for job losses. Kentucky along with the rest of the nation continued to shed jobs for another 8 months and finally reached the low point in February 2010 with a total job losses at 169,000. By this point Kentucky was down 10.8 percent, compared to 10.9 percent in the competitor states and 9.5 percent nationally. While Kentucky and the nation have slowly added jobs since this time, our state is still below where it was seven years ago. By September 2014 Kentucky was -1.5 percent below its number of jobs in December 2007 and -0.9 percent below its September 2007 level. Many causes for this “jobless recovery” have been offered, but it is clear that the way out will be paved by education, enhanced skills, and innovation that creates more employment opportunities.

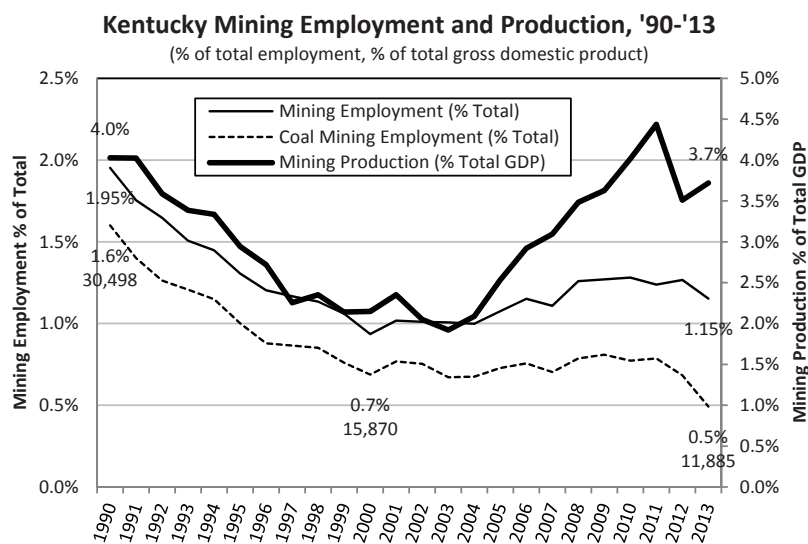
**Job Growth, Kentucky, Competitor States, and the U.S.,
Peak of Last Economic Expansion to the Present,
(percent change in total employment, Dec. 2007 to Sept. 2014)**



Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment, Hours, and Earnings from the Current Employment Statistics survey, total number of private employees, not seasonally adjusted

MINING & COAL

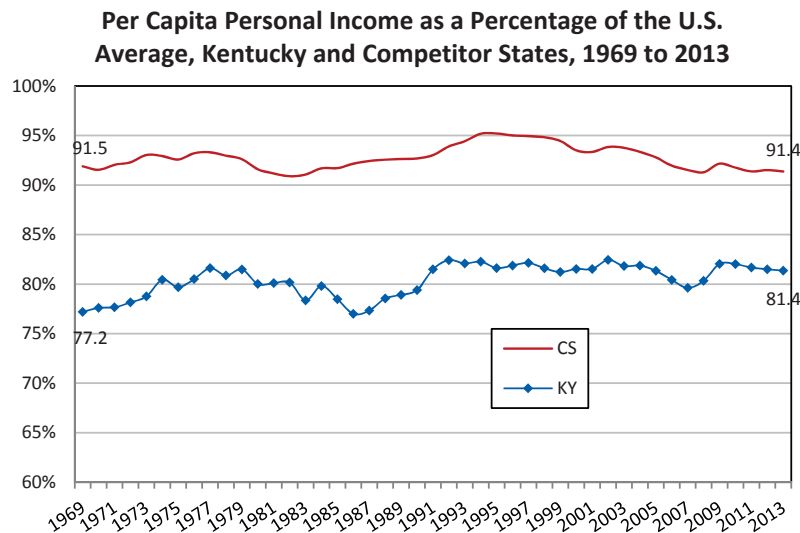
According to the Kentucky Energy and Environment Cabinet, the number of coal jobs in the state is at its lowest point since it began tracking these numbers in 1927. While Kentucky mines a significant amount of coal in both Western and Eastern Kentucky, the bulk of the job losses have been in Eastern Kentucky. When viewed within the context of the state's wider economy, mining employment and coal mining employment are 1.15 and 0.5 percent of total employment, respectively. Similarly, mining production accounts for 3.7 percent of Kentucky's gross domestic product. While the effects of declining production and loss of jobs are small relative to the size of the state's overall economy, the communities where these jobs are concentrated have been hit extremely hard. According to the latest employment numbers from the Kentucky Energy and Environment Cabinet, in the second quarter of 2014 (April to June), coal mining employment was 11,715 (7,294 in Eastern Kentucky and 4,421 in Western Kentucky). These employment numbers include all employees engaged in production, preparation, processing, development, maintenance, repair, shop or yard work at mining operations, mining operations management and all technical and engineering personnel; it does not include office workers.



Source: Bureau of Economic Analysis & Energy Information Administration, Annual Coal Report, various years

PER CAPITA PERSONAL INCOME

While Kentucky's per capita personal income has grown since 1969, its position relative to the nation has not demonstrably improved. Instead, per capita income has oscillated around 80 percent of the national average over the years. In 2013 it was about 81 percent of the U.S. average while the average of the competitor states was around 91 percent. Lagging growth in per capita income has kept Kentucky ranked in the bottom 10 states (i.e., 45th in 2013). Within Kentucky there are marked differences between urban, somewhat rural, and mostly rural counties—as reflected in their respective 2012 per capita income levels of \$39,600, \$32,100, and \$28,800.

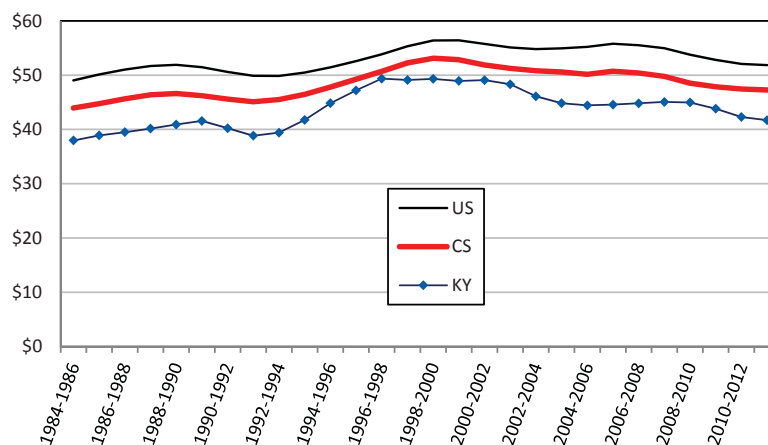


Source: U.S. Department of Commerce, Bureau of Economic Analysis

HOUSEHOLD INCOME

Similar to the trajectory of per capita personal income, median household income in Kentucky is currently about 80 percent of the U.S. average; it is 91 percent for the competitor states. However, since the mid-1980s, Kentucky's median household income increased significantly more than the competitor states or the U.S. For example, Kentucky's median household income increased by \$3,740 in real terms from the mid-1980s to the 2011-2013 period, compared to \$3,308 for the competitor states and \$2,809 for the U.S.—representing increases of 9.9, 7.5, and 5.7 percent for Kentucky, the competitor states, and the U.S., respectively. However, Kentucky's 3-year average of \$41,707 (2013 constant dollars) during the 2011-2013 period is at its lowest point—in 2013 constant dollars—since 1992-1994 when it was \$39,412. During the 2011-2013 time period nearly one third of Kentucky households—30.5 percent—reported less than \$25,000 in income, compared to 23.9 percent nationally.

**Median Household Income, Kentucky,
Competitor States, and the U.S., 1984-2013**
(2013 dollars, thousands, 3-year average)

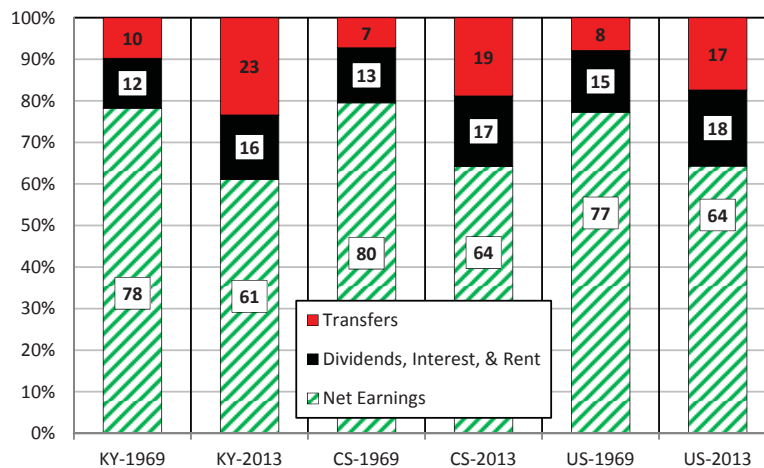


Source: U.S. Census, Annual Social and Economic Supplement

SOURCES OF PERSONAL INCOME

The composition of personal income and its changing nature can exercise a large effect on state and local revenue growth since the personal income tax combined with the occupational tax constitutes the largest portion of Kentucky's state and local revenue receipts. Over the last several years, Kentucky, like the competitor states and the U.S., has experienced a shift in the composition of personal income that has affected revenue adequacy. In 1969, net earnings comprised 79 percent of total personal income in Kentucky. Dividends, interest, and rent, made up another 11 percent. Transfer payments, which consist of government programs like Social Security, Medicare, Temporary Assistance for Needy Families (TANF), and Supplemental Security Income (SSI) payments (to name a few), are essentially untaxed and made up the remaining 10 percent. By 2012, however, net earnings had declined to 62 percent of total personal income while transfer payments increased to 23 percent. By comparison, in 2012 transfer payments constituted 19 percent and 17 percent of personal income in the competitor states and the U.S., respectively.

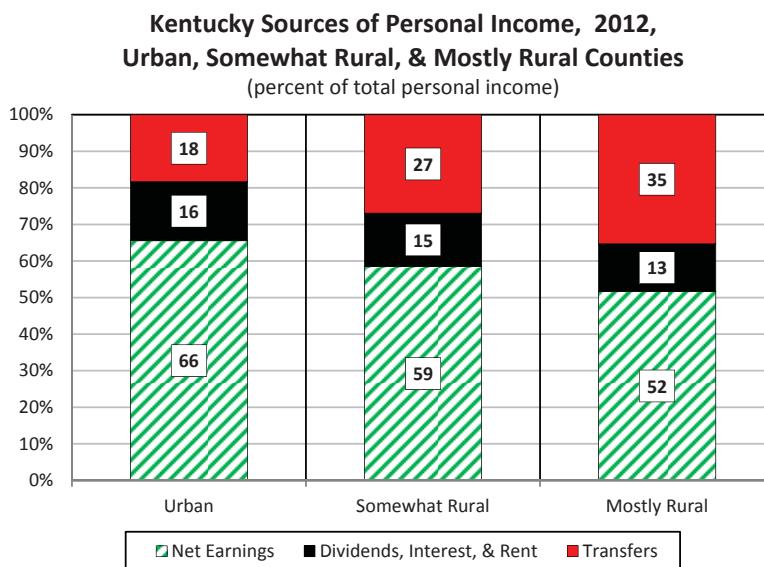
**Sources of Personal Income, 1969 and 2013,
Kentucky, Competitor States, and the U.S.**
(percent of total personal income)



Source: U.S. Department of Commerce, Bureau of Economic Analysis

INCOME SOURCES BY LOCATION

There are significant differences across Kentucky's urban, somewhat rural, and mostly rural counties in the composition of income. In 2012 there were three rural counties where transfer payments as a share of total personal income topped 50 percent and 20 that exceeded 40 percent. Among the 35 urban counties transfer payments constituted 18 percent while net earnings made up 66 percent of total personal income. These percentages shift away from net earnings and toward transfer payments for the 25 somewhat rural and 60 mostly rural counties. Over one-third of total personal income comes from transfer payments in Kentucky's mostly rural counties. Clearly, there are systemic, deep-seated development hurdles in these counties that are difficult to clear despite the multiple attempts to do so over the last several decades.

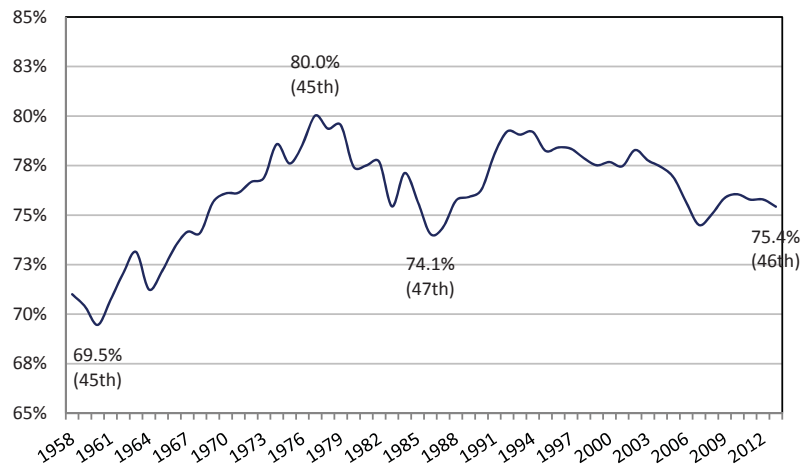


Source: U.S. Department of Commerce, Bureau of Economic Analysis

EARNED INCOME PER CAPITA

Because earned income is the portion of personal income that does not include transfer payments from various social assistance or public welfare programs, it is a good indicator of the underlying economic vitality of a state, county, or region. Kentucky's earned income per capita relative to the U.S. average increased steadily from 1960 to 1977, but did not result in an improvement in the state's national ranking. Since 1977 Kentucky's earned income relative to the U.S. has dropped and is currently at 75.4 percent, which ranks 46th among the states. Kentucky's earned income per capita is \$27,765, significantly below the highest state, Connecticut (\$52,319) and just above the lowest state, West Virginia (\$25,822).

Earned Income Per Capita in Kentucky as a Percentage of the U.S. Average, 1958 to 2013

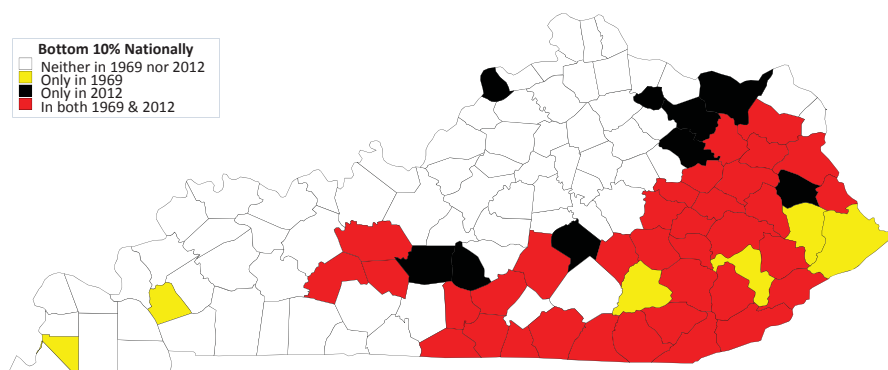


Source: U.S. Department of Commerce, Bureau of Economic Analysis. Earned income = personal income minus current transfers

EARNED INCOME PER CAPITA BY COUNTY

When President Johnson's War on Poverty was gathering steam in late 1960s, 41 of Kentucky's 120 counties had per capita earned income levels placing them in the bottom ten percent of the 3,000-plus counties in the United States. By 2011—42 years later—35 of these counties, or 85%, were still in the bottom ten percent. About half (49.4%) of the counties nationally and around 54% in the dozen nearby competitor states that were in the bottom ten percent in 1969 were still there in 2011. While most of these persistently poor counties are in Eastern Kentucky, the map shows several counties in the south central part of the state.

**Ranking Kentucky Counties by Earned Income Per Capita,
Bottom 10 Percent Nationally, 1969 and 2012**



Source: Bureau of Economic Analysis

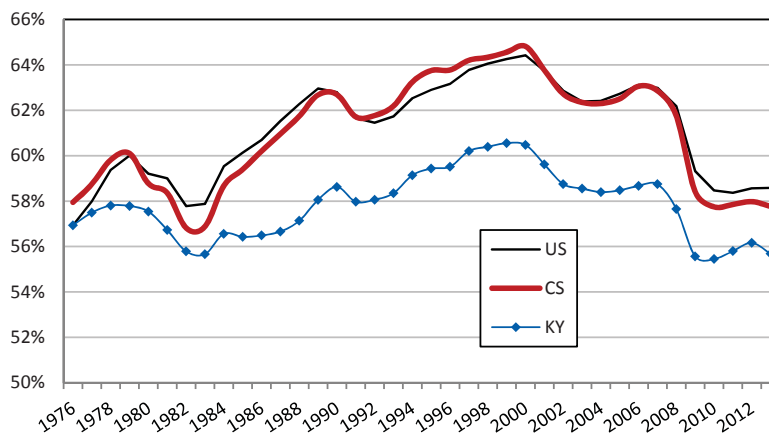
Note: Earned Income is calculated by subtracting current transfers from personal income and dividing by the total population.

EMPLOYMENT-POPULATION RATIO

This ratio is the proportion of the civilian non-institutional population aged 16 years and older that is employed. According to the U.S. Department of Labor, Bureau of Labor Statistics (BLS), some believe the employment-population ratio is a better indicator of economic activity and economic performance than the unemployment rate. North Dakota and West Virginia had the highest and lowest employment-population ratios in 2013, 69.4 and 50.1 percent, respectively. Kentucky's 2013 value was 55.7 percent—somewhat lower than both the competitor states (57.8) and the U.S. (58.6) averages. In 1976 Kentucky and the competitor states had identical employment-population ratios of 56.9 percent, but, as evidenced in the figure below, the competitor states have more or less tracked the U.S. average and experienced employment-population ratios 2 to 4 percentage points higher than Kentucky since the mid-1980s.

Employment-Population Ratio, Kentucky, Competitor States, and the U.S., 1976 to 2013

(percentage of civilian noninstitutional population over 16 employed)

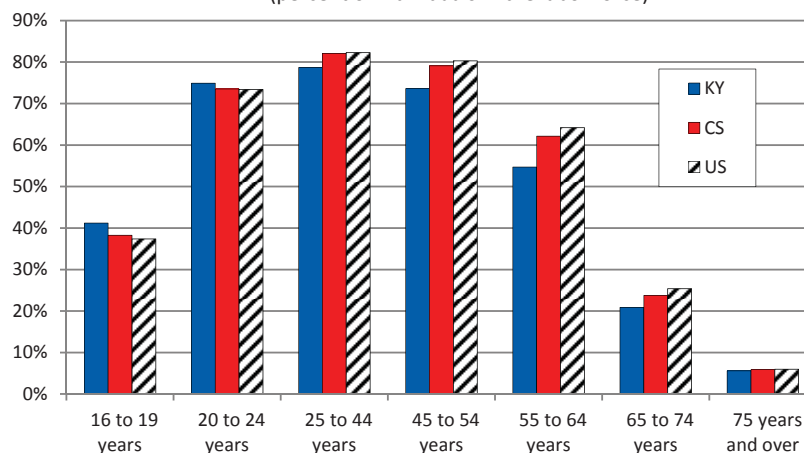


Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics

LABOR FORCE PARTICIPATION

The labor force participation rate is the proportion of the civilian noninstitutional population that is in the labor force. The national labor force participation rate increased from around 60 percent in 1970 to about 67 percent in 2000, driven in large part by the increased participation by women. During the 2011 to 2013 period, the US labor force participation rate for individuals 16 and older was 63.8 percent. The participation rates ranged from 70.8 percent in Alaska to 54.4 percent in West Virginia. Over the last few years the labor force participation rate among Americans 16 to 24 years old has been decreasing while the rate for older Americans (65 and older) has been steadily increasing. Analysts have attributed these trends to the nation's economic downturn and the impact it has had on the job market as well as retirement savings. Workers are delaying retirement or reentering the workforce while younger Americans are opting for school (instead of work) or simply unable to find work. Kentucky's labor force participation rate for those 20 to 24 looks very similar to both the competitor states and the U.S. However, the labor force participation rate for Kentuckians 25 to 54—the prime working years—is 76.9 percent compared to 81.1 percent for the competitor states. And, in the 55 to 64 age group, Kentucky is significantly lower, as evidenced in the chart below.

**Labor Force Participation by Various Age Groups,
Kentucky, Competitor States, and the U.S., 2011-2013**
(percent of individuals in the labor force)

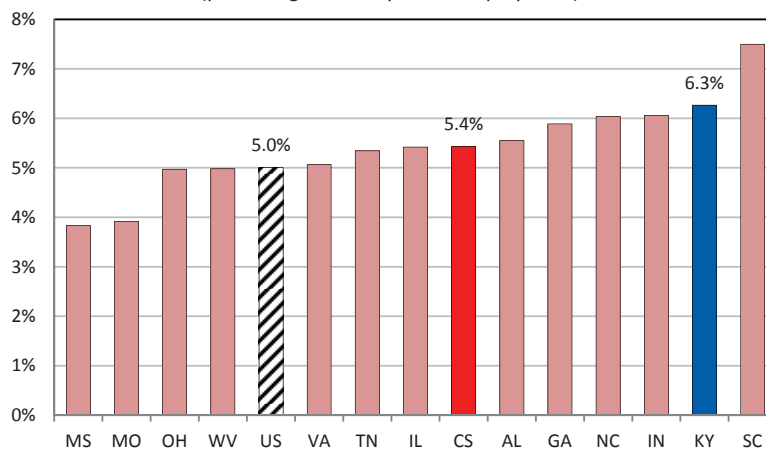


Source: 2011-2013 American Community Survey 3-Year Estimates

EMPLOYMENT BY FOREIGN COMPANIES

Foreign companies create important economic benefits for the American economy. These companies invest billions of dollars in the U.S. economy and create hundreds of thousands of jobs. Kentucky has worked hard to capitalize on the opportunities presented by globalization—reflected by the presence in the state of more than 400 international companies from nearly 30 countries. A majority-owned U.S. affiliate is an American business enterprise in which there is a foreign direct investment that accounts for at least 50 percent of the ownership. In Kentucky there are an estimated 95,400 individuals employed by majority-owned U.S. affiliates. As a percentage of total private industry employment, it has been around 6 percent since 2007—evidenced by 6.3 percent in 2012. This is much higher than the U.S. average of 5.0 percent and leads all competitor states except for South Carolina (7.5%).

**Employment of Majority-Owned U.S. Affiliates, 2012,
Kentucky, Competitor States, & the U.S.**
(percentage of total private employment)



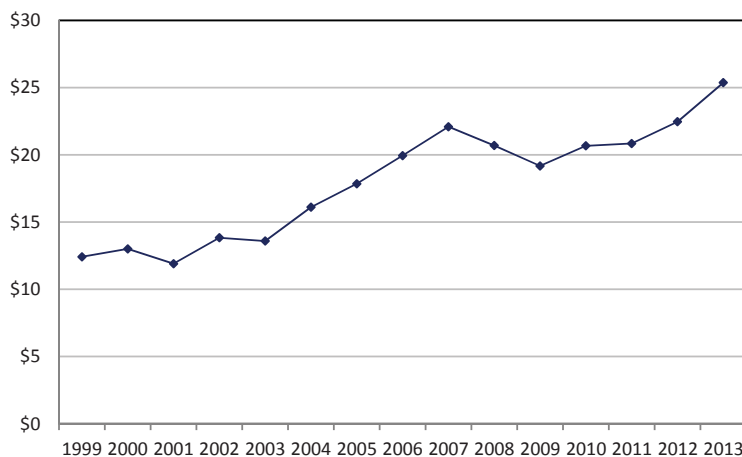
Source: Author's calculations using data from the Bureau of Economic Analysis, Regional Economic Accounts & International Data.

Note: CS is a weighted average of the competitor states

EXPORTS

The value of Kentucky's exports of goods doubled in the last decade. Indeed, from 1999 to 2013 the compound annual growth rate of Kentucky's exports is 7.8 percent; this is higher than the U.S. compound annual growth rate of 6.0 percent as well as the 6.7 percent experienced by the competitor states. The value of Kentucky's exports of goods in 2013 was \$25.4 billion, which is equivalent to 13.8 percent of Kentucky's gross domestic product; it was 8.5 percent for the competitor states and 9.5 percent for the U.S. Most of Kentucky's exported goods go to Canada, which accounted for 30.6 percent of the total value of exported goods. Mexico was second (7.4), followed by the United Kingdom (7.2), China (5.3), and Brazil (5.0). Kentucky exported to almost 200 different countries in 2013, but the top 5 countries accounted for nearly 56 percent of the total value of exported goods. Almost one-half (45 percent) of the value of exported goods was transportation equipment, followed by chemicals (17), machinery-except electrical (7.4), computer and electronic products (7.2), and electrical equipment-appliances & components (2.5). Combined, the top 5 categories accounted for over three-fourths (78.1%) of Kentucky's exports in 2013.

Kentucky Exports of Goods, 1999-2013
(constant 2013 billions)

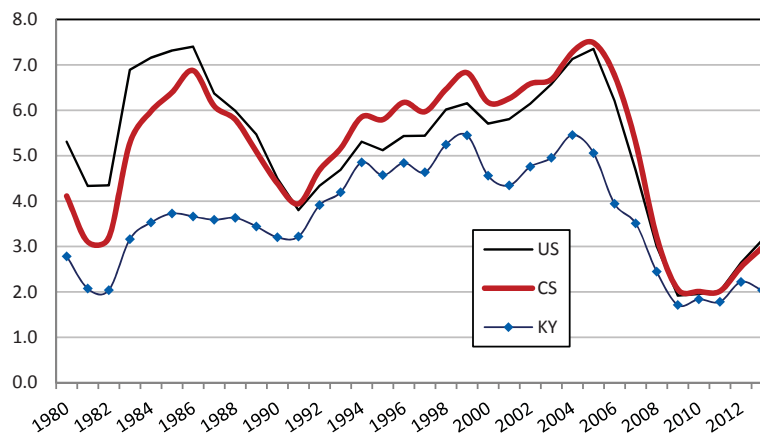


Source: Office of Trade and Industry Information (OTII), Manufacturing and Services, International Trade Administration, U.S. Department of Commerce.

HOUSING STARTS

A housing start is when a new foundation is laid. Because housing starts represent the first step in a series of cascading future purchases, such as furniture, appliances, and landscaping, a housing start is considered a leading economic indicator and a foundation of determining future economic trends. Going back to 1980, Kentucky's housing starts peaked in 2004 with 22,623 and declined steadily until hitting its nadir of about 7,400 in 2009. Following the U.S. and competitor state trend, Kentucky housing starts have stabilized since then and increased to 8,955 in 2013. The overall trends nationally have seen relatively strong gains in multifamily housing, such as apartment buildings, and somewhat lackluster growth in single-family homes, which is a much bigger driver of economic growth. In Kentucky, for example, single family homes accounted for 6,077 of the new starts in 2013, or about two-thirds of the total market.

**Number of New Residential Housing Units,
Kentucky, Competitor States, and the U.S., 1980 to 2013**
(Per 1,000 Population)

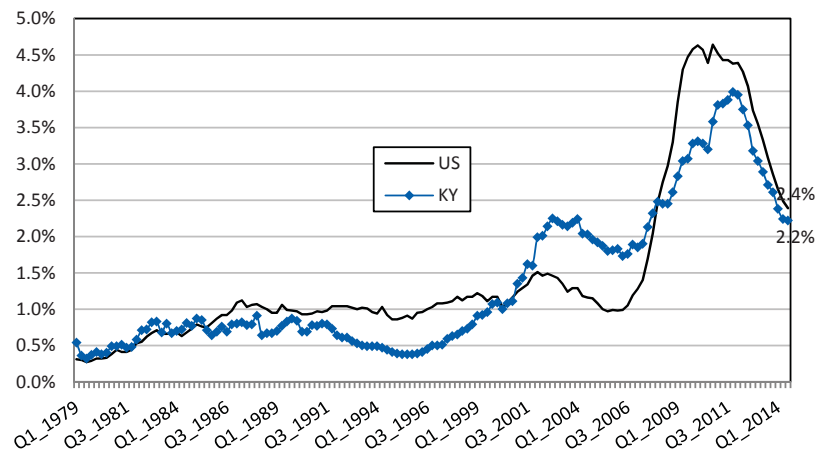


Source: U.S. Census Bureau

FORECLOSURES

Leading up to the Great Recession, the federal government and the private sector undertook extensive efforts to increase the number of homeowners by keeping mortgage rates low and by allowing small, or nonexistent, down payments. By the fourth quarter of 2007—the peak of the last economic expansion—the homeownership rate was 69 percent nationally and 75 percent in Kentucky. It is now clear, however, that many of these new homeowners could not afford their homes, as evidenced in the figure below by a sharp increase in foreclosures beginning in 2008. In Kentucky the percentage of mortgage loans in foreclosure peaked in the fourth quarter of 2011 at 4 percent. The foreclosure rate has declined since then and currently stands at 2.2 percent in Kentucky and 2.4 percent nationally. Kentucky's 2.2 percent is its lowest foreclosure rate since the fourth quarter of 2007 when it was 2.1 percent. By the third quarter of 2014 the homeownership rate was 70.4 percent in Kentucky and 64.4 percent nationally.

**Mortgage Foreclosure Inventory,
Kentucky and the U.S., 1979 (Q1) to 2014 (Q3)**
(mortgage foreclosures as a percentage of all mortgages)



Source: Mortgage Bankers Association

OVERVIEW

THE FOCUS ON THE INCOME DISTRIBUTION HAS BEEN AN important part of the political discourse for at least the last few decades, and it arguably reached new levels of intensity among the political, economic, academic, and journalistic cognoscenti with the 2014 publication of Thomas Piketty's opus, *Capital in the Twenty-First Century*. These debates have focused on whether, in fact, there is income inequality, and what, if anything, should be done to address it.

Based on changes in household income from the late 1970s to the current period, those in lower, lower-middle, and middle class households lost economic ground when measuring changes in income, particularly in Kentucky. Meanwhile, as illustrated in the Income Distribution graph on page 50, those in upper-middle and upper income households gained economic ground, even in Kentucky.

Part of the debate centers on what is included as "income." Our data reflect total pre-tax personal income from all sources for all adults in the household; this includes things like regular wages or a salary derived from working at a job as well as regular pension income from sources like Social Security. Noncash benefits, such as food stamps, health benefits, or subsidized housing are not included.

Using a more comprehensive measure of income that takes into account public and private in-kind benefits as well as taxes, economists Philip Armour, Richard V. Burkhauser, and Jeff Larrimore published a study in 2014 in which they find income disparities are reduced dramatically once transfers and taxes are taken into account.

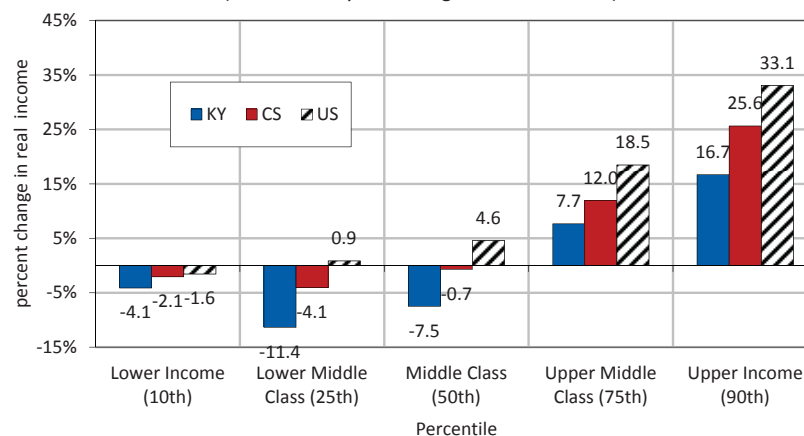
Complicating the picture further, in December 2014 the Pew Research Center released a study in which they concluded that the gap in wealth between those in the top 20 percent and the bottom 80 of earners was at its widest point since 1983. When measuring net worth, those in the top 20 percent were 6.6 times wealthier than those in the middle (compared to being 3.4 times wealthier in 1983) and 70 times wealthier than those in the bottom. Their focus is on net worth (not income), which is the difference between assets (e.g., house, car, and savings), and debts (e.g., mortgage, credit cards, and student loans).

While these analyses differ in approach and conclusion, many individuals still do not feel economically secure five years after the Great Recession ended. In addition to stagnant incomes, the poverty rate as well as public assistance program participation is higher in Kentucky than in many of the competitor states, evidence of continuing economic uncertainty for many.

INCOME DISTRIBUTION

For at least 35 years household income levels have changed at uneven rates depending upon whether one is “rich,” “poor,” or somewhere in-between. For Kentucky families, incomes at the 25th percentile—what some might consider “lower middle class”—declined about 11 percent here compared to growth nationally of around 1 percent in real dollars. By comparison, incomes at the 75th percentile, or “upper middle class,” increased for Kentucky and the U.S. by around 8 and 19 percent, respectively, in real dollars, from the late 1970s to the early 2010s. The contrast is the greatest between incomes at the 10th and 90th percentiles, with incomes declining in Kentucky, competitor states, and the U.S. by -4.1, -2.1, and -1.6 percent, respectively, at the lower income level, and increasing by 16.7, 25.6, and 33.1 percent at the upper income level. These data reflect total pre-tax personal income from all sources for all adults in the household. Noncash benefits, such as foodstamps, health benefits, or subsidizing housing are not included as household income. Many factors have contributed to the widening gap, including the rise of globalization and outsourcing, increasing returns to high-level skills, the automation of routine jobs, declining unionization, immigration, and tax policies.

**Changes in Household Income, by Income Level,
1977-79 to 2011-13, KY, Competitor States and the U.S.**
(based three-year averages of 2014 dollars)

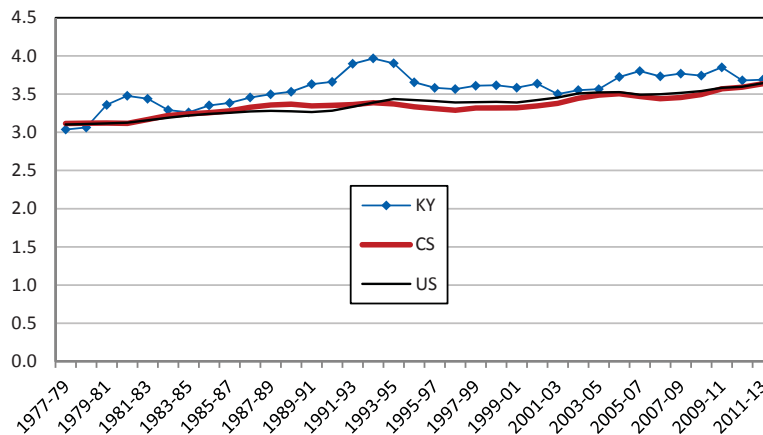


Source: Author's analysis of IPUMS-CPS data, courtesy of Miriam King, Steven Ruggles, J. Trent Alexander, Sarah Flood, Katie Genadek, Matthew B. Schroeder, Brandon Trampe, and Rebecca Vick. Integrated Public Use Microdata Series, Current Population Survey: Version 3.0. [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

INCOME RATIO

Household income levels at the 25th and 75th percentiles can be viewed as boundaries around America's middle class. In the late 1970s upper middle class households—those at the 75th percentile—had incomes about 3 times larger than lower middle class households, which are those at the 25th percentile; this is true of Kentucky, its competitor states, and the United States overall, where the ratios were 3, 3.1, and 3.1 respectively around 35 years ago. However, the gap has widened since then, evidenced by the ratios increasing to 3.7, 3.6, and 3.6 for Kentucky, its competitor states, and the U.S. by the early 2010s. In Kentucky, household income for the lower middle class declined during this time period, evidenced by a -11.4 percent decline in real income. Meanwhile incomes increased by 7.7 percent in real dollars for Kentucky's upper middle class, but still lagged behind the gains experienced in the competitor states (12%) and the U.S. (18.5%).

**Household Income Ratios, 75th/25th Percentiles,
Kentucky, Competitor States, and the U.S.**

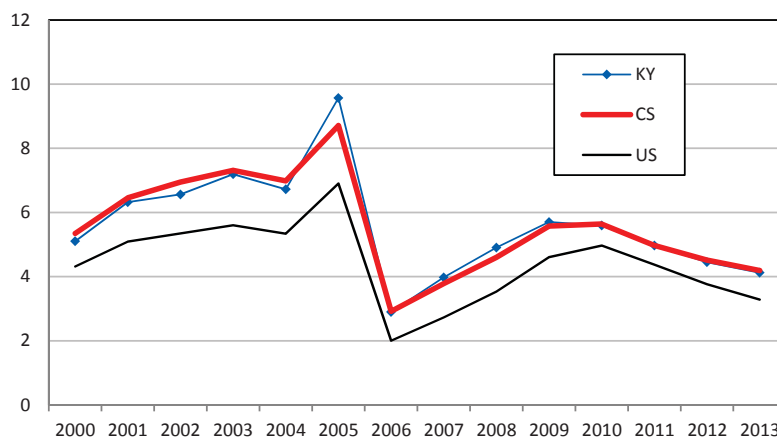


Source: Author's analysis of IPUMS-CPS data, courtesy of Miriam King, Steven Ruggles, J. Trent Alexander, Sarah Flood, Katie Genadek, Matthew B. Schroeder, Brandon Trampe, and Rebecca Vick. Integrated Public Use Microdata Series, Current Population Survey: Version 3.0. [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

PERSONAL BANKRUPTCIES

Bankruptcy is defined as “a legal proceeding involving a person or business that is unable to repay outstanding debts.” The idea is to develop a plan that enables the individual (or business) to gain a fresh financial start while providing creditors with some prospect of repayment for outstanding debts. The personal bankruptcy rate provides an indication of the overall financial health of individuals and families. As consumers acquire excessive debt or economies are in recession, for example, the threat of personal bankruptcy increases. The laws governing bankruptcy changed in 2005, which had the immediate effect of reducing the number of individuals filing for bankruptcy. The personal bankruptcy rate in Kentucky has essentially been the same as the competitor states, which in 2013 was just over 4 bankruptcies per 1,000 population. The U.S. average has been somewhat lower over the 2000-2013 period, and stood at 3.3 in 2013. Overall, the bankruptcy rate has been on a downward trend since 2010.

**Personal Bankruptcies,
Kentucky, Competitor States, and the U.S., 2000-2013**
(bankruptcies per 1,000 population)

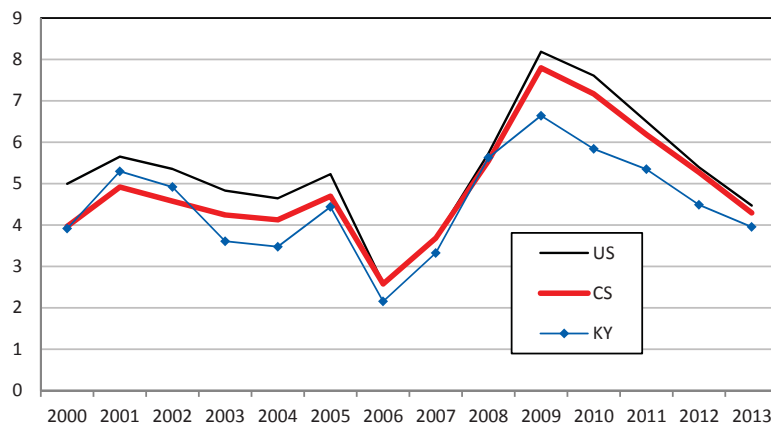


Source: Administrative Office of the U.S. Courts & Census data provided by the Indiana Business Research Center, Indiana University, Kelley School of Business

BUSINESS BANKRUPTCIES

According to the National Bureau of Economic Research (NBER), the trough of the most recent recession was in the second quarter of 2009. It is perhaps no surprise, then, that 2009 is the peak year, as shown in the graph below, for the number of businesses that filed for bankruptcy. Across the various Circuit and District Courts in 2009, there were 60,837 bankruptcy business filings (Chapters 7, 11, 12, 13)—but this has steadily declined since then with 33,212 in 2013. Business filings across the U.S. in the first three quarters of 2014 are 19.1 percent lower than the number filed in the first three quarters of 2013. When expressed as a percentage of business establishments, Kentucky has been lower than the competitor states and the U.S. during the last few years but has historically had similar rates.

**Business Bankruptcies,
Kentucky, Competitor States, and the U.S., 2000-2013**
(bankruptcies per 1,000 business establishments)

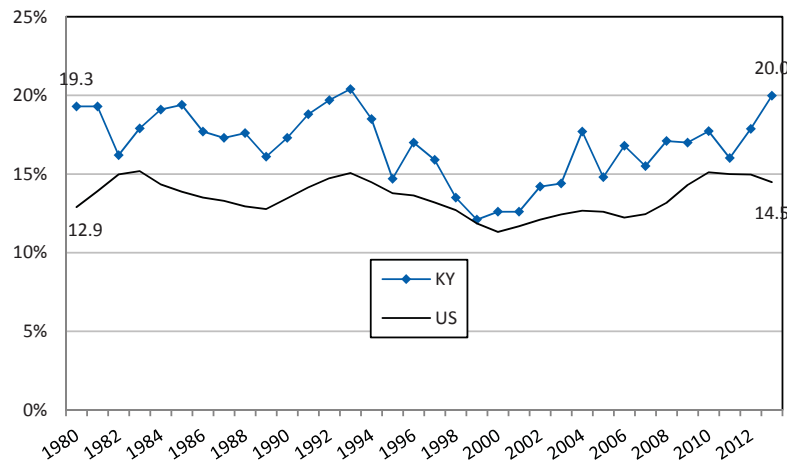


Source: Administrative Office of the U.S. Courts data provided by the Indiana Business Research Center, Indiana University, Kelley School of Business. The establishment data are U.S. Census, County Business Patterns, various years. Note: 2013 data are estimated by using 2012 establishments and 2013 bankruptcies.

POVERTY RATE

Living in poverty can have far-reaching economic, social, and cultural consequences for families and entire populations. Studies reveal that those who grow up in poverty not only experience a lack of basic needs, but that this scarcity can shape their lives and families for generations. In addition, the concentrations of poverty have a significant negative effect on the fiscal health of cities and regions that, as a result, must shoulder higher spending. The U.S. poverty rate increased during the Great Recession and currently stands at 14.5 percent. Kentucky's poverty rate has been on an upward trend since 1999 and currently is 20 percent—its highest level since 1993.

Poverty Rate in Kentucky and the U.S., 1980-2013
(percentage of individuals)

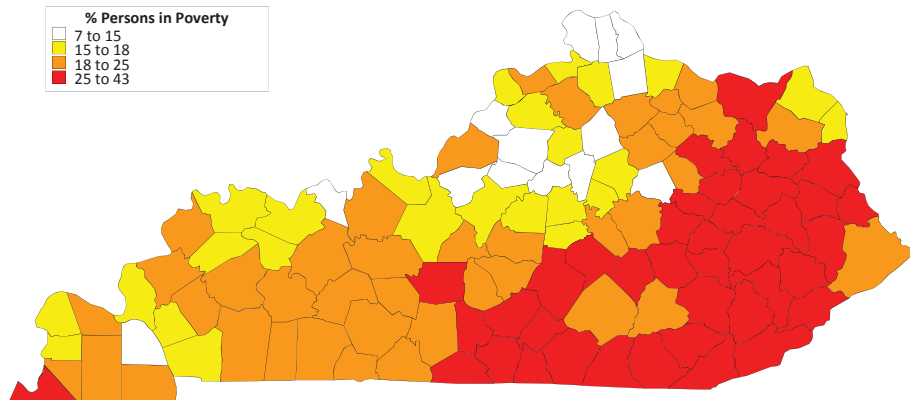


Source: U.S. Census Bureau, Current Population Survey, March supplement, various years

POVERTY RATE BY COUNTY

Kentucky's persistently poor counties are concentrated in Eastern Kentucky, but high poverty is found across the state. Poverty rates in Clay, Lee, Martin, McCreary, and Owsley Counties are hovering around 40 percent—the highest in the state—while Boone and Oldham Counties have rates in the single digits. There can be, of course, concentrated pockets of poverty within counties with relatively low rates. At just over 26 percent, the “mostly rural” counties generally have higher poverty rates than “slightly rural” (20.2%) and metro counties (16.3%).

Estimated County Poverty Rates, 2012

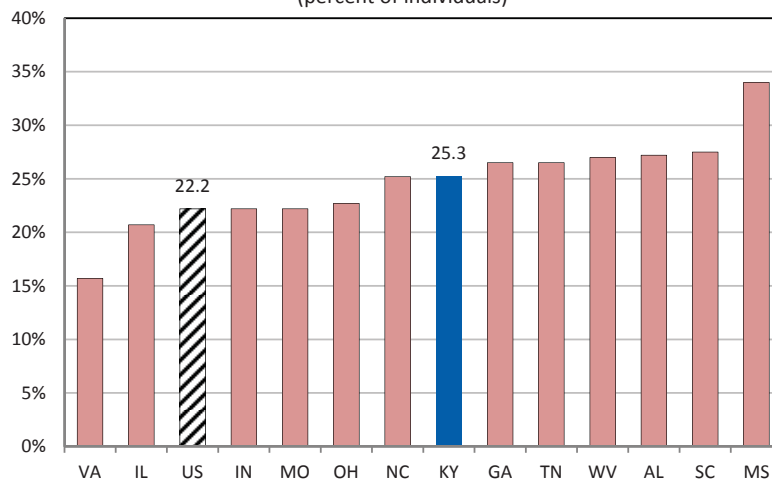


Source: U.S. Census Bureau, Small Area and Income Estimates (SAIPE)

CHILD POVERTY

Child poverty and all that it bodes for the future continue to be disturbing and vexing problems for Kentucky. Here we illustrate child poverty rates for Kentucky, the competitor states, and the U.S. The rates shown are for children who live in households with incomes below 100 percent of the federal poverty level. Kentucky's poverty rate in 2013 was 25.3 percent, a significant increase from 20 percent in 2000. While Kentucky sits more or less in the middle of the competitor states, there is not a statistically significant difference between Kentucky and several other states, such as West Virginia, Tennessee, North Carolina, South Carolina, Georgia, and Alabama (using a 90 percent margin of error). Kentucky's child poverty rate is significantly higher than the U.S. rate of 22.2 percent. At 34 percent, Mississippi has the highest child poverty rate in the nation.

**Poverty Rate, 2013, Children Under 18,
Kentucky, Competitor States and the U.S.**
(percent of individuals)

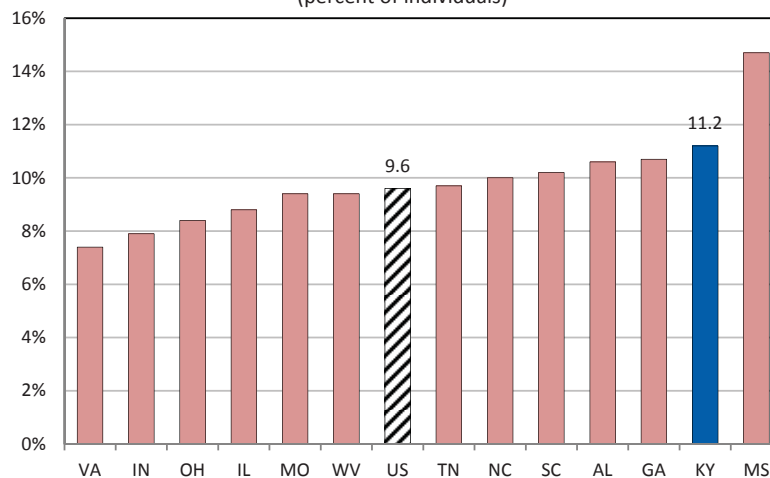


Source: 2013 American Community Survey 1-Year Estimates

ELDERLY POVERTY

The first wave of Baby Boomers started hitting the traditional retirement age of 65 in 2011 and many are financially ill-prepared for retirement. The Employee Benefit Research Institute's 2014 Retirement Confidence Survey finds, among other insights, that 28 percent of retirees are "very confident" about having enough money to live comfortably throughout their retirement years, which is significantly lower than the 44 percent who felt very confident in the 2007 survey—just before the Great Recession. Thirty-nine percent are "somewhat" confident, 14 percent are "not too" confident, and 17 percent are "not at all" confident. According to the survey, 66 percent of retirees saved money for retirement—which obviously means that one-third did not. This widespread lack of saving for retirement places many seniors in a precarious position for their retirement years. At 11.2 percent, Kentucky's population of persons aged 65 and older who live below the poverty level is higher than most of the competitor states as well as the U.S. average of 9.6 percent. However, the differences between Kentucky and several other states (i.e., Georgia, Alabama, and South Carolina) are not statistically significant.

Poverty Rate, 2013, Adults 65 and Over
Kentucky, Competitor States and the U.S.
 (percent of individuals)

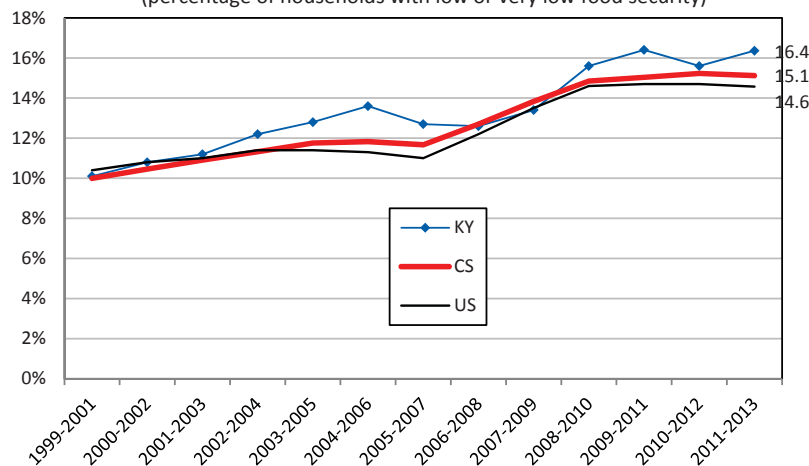


Source: 2013 American Community Survey 1-Year Estimates

FOOD INSECURITY

Annual surveys conducted by the U.S. Department of Agriculture show that the prevalence of food insecurity has been steadily increasing over the last decade. Food security is defined as having “access at all times to enough food for an active, healthy life for all household members,” while food insecurity means “that the food intake of one or more household members was reduced and their eating patterns were disrupted at times during the year because the household lacked money and other resources for food.” An estimated 10.1 percent of Kentucky households experienced food insecurity during the 1999-2001 period, and this increased to 16.4 percent in the most recent period. The competitor states and the U.S. averages were lower than Kentucky’s, at 15.1 and 14.6 percent respectively. Generally, national data show that rates of food insecurity tend to be higher for certain groups, such as households with children—especially young children (under age 6), households with children headed by a single parent—especially a woman, households headed by a minority—especially Black and Hispanic, and those with lower incomes.

**Prevalence of Food Insecurity,
Kentucky, Competitor States and the U.S., 1999-2013**
(percentage of households with low or very low food security)

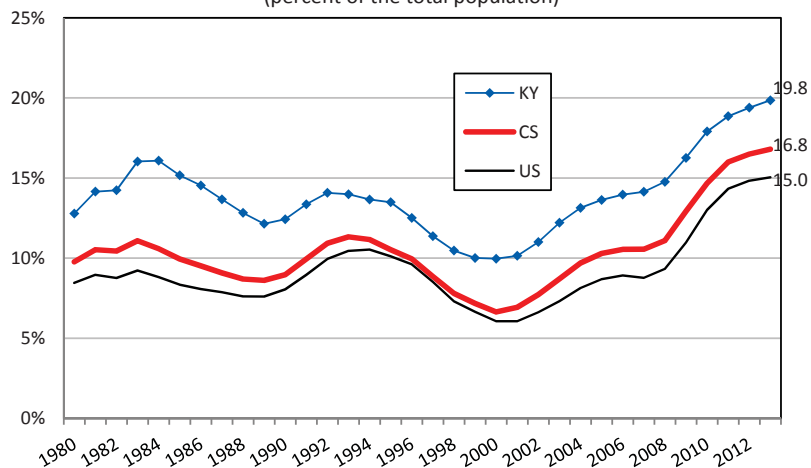


Source: United States Department of Agriculture, Household Food Security in the United States, various years.

FOOD STAMP PARTICIPATION

Many Americans rely on the Food Stamp Program (FSP) to purchase food for their families. The Food Stamp Act of 1977 defines this federally-funded program as one intended to “permit low-income households to obtain a more nutritious diet.” Nationally almost 75 percent of FSP participants are in families with children and more than one-quarter of participants are in households with seniors or people with disabilities. From 1980 to 1999, Kentucky’s average monthly participation in the Food Stamp Program—known as the Supplemental Nutrition Assistance Program (SNAP)—was approximately 500,600 individuals. The low point in participation was in 1999 when it was 396,400. Since then, however, the number of participants has climbed precipitously and, at 872,439 in 2013, was over double the 1999 total. This number represents 19.8 percent of Kentucky’s population. By comparison, about 16.8 percent of the population in the competitor states and 15 percent in the U.S. received SNAP benefits in 2013. SNAP benefits are dependent on, among other factors, family size and income levels—with the average SNAP recipient in the U.S. receiving about \$133.07 a month in fiscal year 2013; the average per person benefit in Kentucky is \$127.33.

Food Stamp Program, Average Monthly Participation, Kentucky, Competitor States, and the U.S., 1980-2013
(percent of the total population)

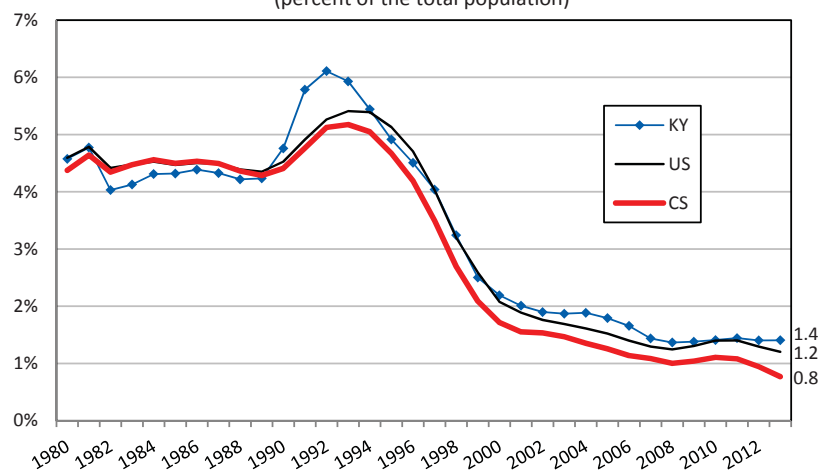


Source: U.S. Department of Agriculture Food and Nutrition Service and U.S. Census

TEMPORARY ASSISTANCE FOR NEEDY FAMILIES

The number of Kentuckians receiving Aid to Families with Dependent Children (AFDC)—known as Temporary Assistance to Needy Families (TANF) since the 1996 welfare reform law—has decreased significantly from its highpoint of 229,400 in 1992 to 61,800 in 2013; roughly 80 percent of the recipients in 2013 were children. This decline is not unique to Kentucky. For example, marking the 16th anniversary of the 1996 legislation that fundamentally changed the program, the Center on Budget and Policy Priorities (CBPP) issued a report in August, 2012, noting that nationally the number of families receiving TANF (AFDC) benefits for every 100 families with children in poverty has declined sharply over time. In 1979, for instance, 82 families per 100 with children in poverty received benefits, compared to 68 in 1996—when TANF was enacted—to 27 in 2010. As a percentage of the total population, more Kentuckians received TANF benefits in 2013, about 1.4 percent, than the competitor state average of 0.8 percent. At 1.9 percent, Tennessee has the highest percentage among the competitor states and Georgia has the lowest at 0.4 percent. The benefit amount for a Kentucky family of three is \$262 per month, which has not changed since 1996. If the benefit had been indexed to the inflation rate it would equal \$395 in 2014.

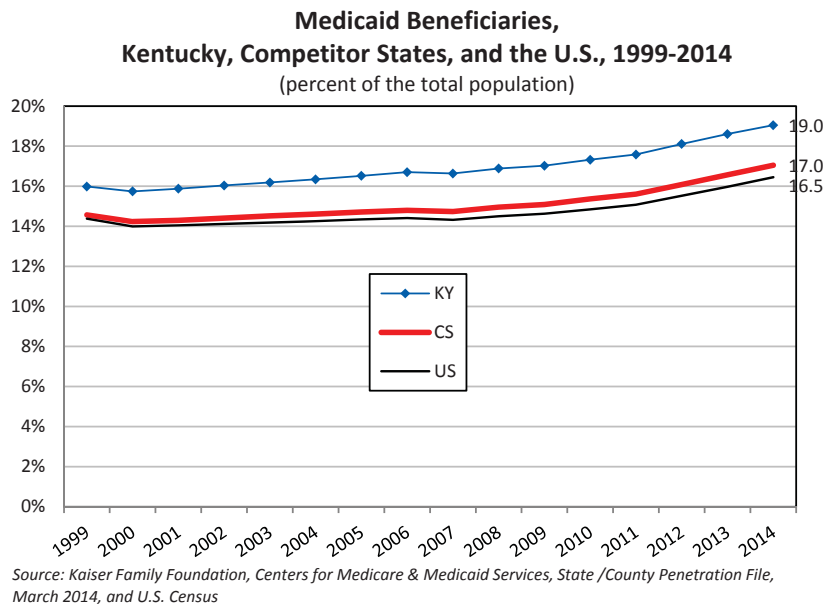
**AFDC/TANF Recipients,
Kentucky, Competitor States, and the U.S., 1980-2013**
(percent of the total population)



Source: The Administration for Children and Families, U.S. Department of Health and Human Services, and U.S. Census

MEDICAID BENEFICIARIES

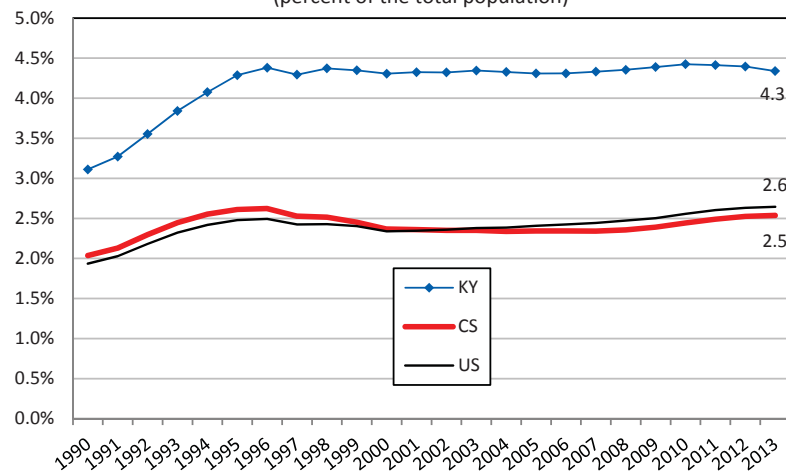
Medicaid is a state-federal partnership to provide health care coverage for people with lower incomes, older people, individuals with disabilities, and some families and children. The Medicaid program is jointly funded by states and the federal government, but the states administer Medicaid within broad federal rules and have a lot of flexibility to design their programs. The eligibility rules for Medicaid are different for each state, but most states offer coverage for adults with children at some income level. In Kentucky, the Department for Medicaid Services administers the \$16.4 billion program—the budgeted level for the 2014-2016 Biennium. There are many types of services provided for Kentucky's 837,100 Medicaid beneficiaries—from inpatient hospitalization to long-term care to prescription drugs for acute care. In the wider context of Kentucky's state budget, Medicaid constitutes a significant portion of total state government spending. According to the National Association of State Budget Officers, *State Expenditure Report: Fiscal Years 2012-2014*, 21.9 percent of Kentucky state government expenditures were for Medicaid. The percentage of the population on Medicaid in Kentucky, the competitor states, and the U.S. is 19, 17 and 16.5 percent, respectively.



SUPPLEMENTAL SECURITY INCOME (SSI)

The Supplemental Security Income (SSI) is a Federal income supplement program that is administered by the Social Security Administration (SSA) and funded by general tax revenues (not Social Security taxes). According to the SSA, "It is designed to help aged, blind, and disabled people, who have little or no income, and it provides cash to meet basic needs for food, clothing, and shelter." Of Kentucky's 190,700 recipients in 2013, 5 percent were aged and 95 percent were blind and/or disabled. One third of the recipients were either under 18 (15.1%) or over 64 years old (16.7%). As is evident by the figure, the percentage of Kentuckians receiving SSI benefits, 4.3 percent, is much higher than the U.S. (2.6%) or competitive state averages (2.5%).

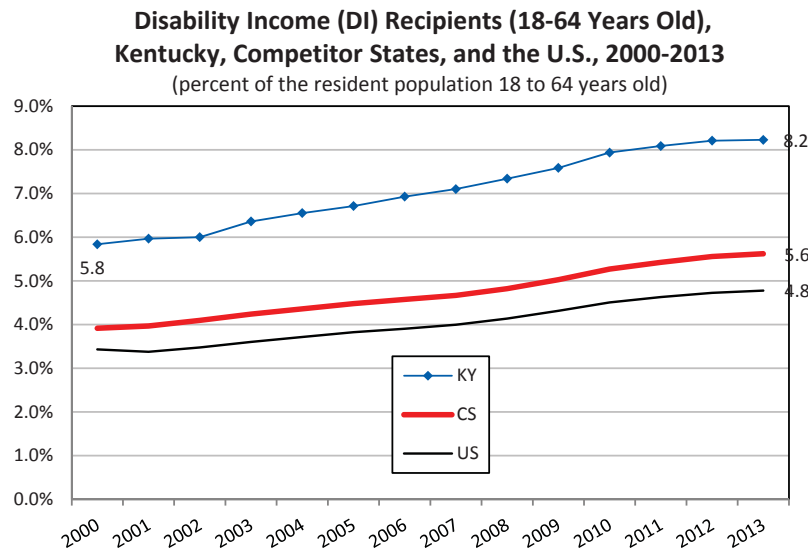
**Supplemental Security Income (SSI) Recipients,
Kentucky, Competitor States, and the U.S., 1990-2013**
(percent of the total population)



Source: Social Security Administration

DISABILITY INCOME (DI)

According to the Social Security Administration, “Studies show that just over 1 in 4 of today’s 20 year-olds will become disabled before reaching age 67.” The Social Security Disability Insurance (SSDI) program pays benefits to disabled individuals and some family members if the individual worked long enough and paid Social Security taxes. Kentucky has a higher than average disability rate so it is not surprising that a higher percentage of the state’s population receive DI benefits. The percentage of Kentuckians between 18 and 64 years old who receive DI benefits is 8.2 percent, markedly higher than both the competitor state (5.6%) and U.S. (4.8%) averages. The average monthly benefit nationally for disabled workers is \$1,146. This program, however, is resting on a shaky financial foundation. It is estimated that SSDI will be unable to cover up to 20 percent of its obligations beginning as soon as 2016. Analysts at RAND have pointed out that there is not enough money going into the program to provide benefits to a growing caseload—noting that changes to the program are inevitable and just over the horizon.

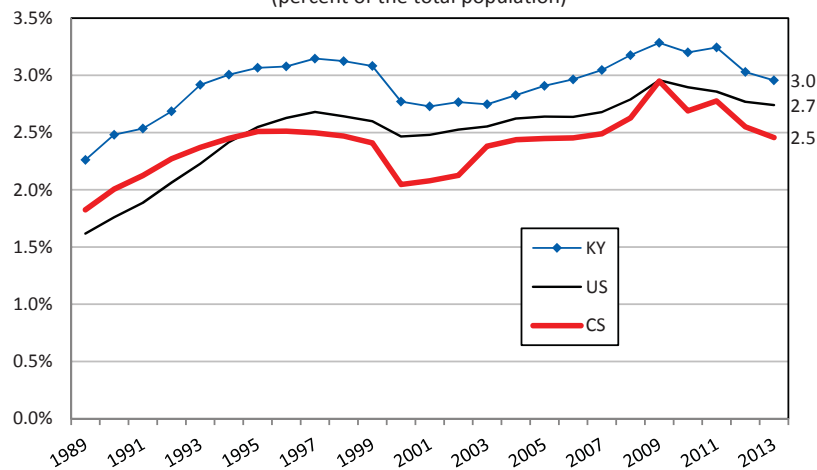


Source: Social Security Administration, Annual Statistical Report on the Social Security Disability Insurance Program, various years.

WOMEN, INFANTS, AND CHILDREN (WIC)

Women, Infants, and Children (WIC) is a federal nutrition program for “supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are found to be at nutritional risk.” Three percent of Kentucky’s population receives WIC benefits, which is essentially where it has been since the mid-1990s. Kentucky’s percentage is only slightly higher than the U.S. (2.7%) and competitor states (2.5%).

**Women, Infants, and Children (WIC) Recipients,
Kentucky, Competitor States, and the U.S., 1989-2013**
(percent of the total population)

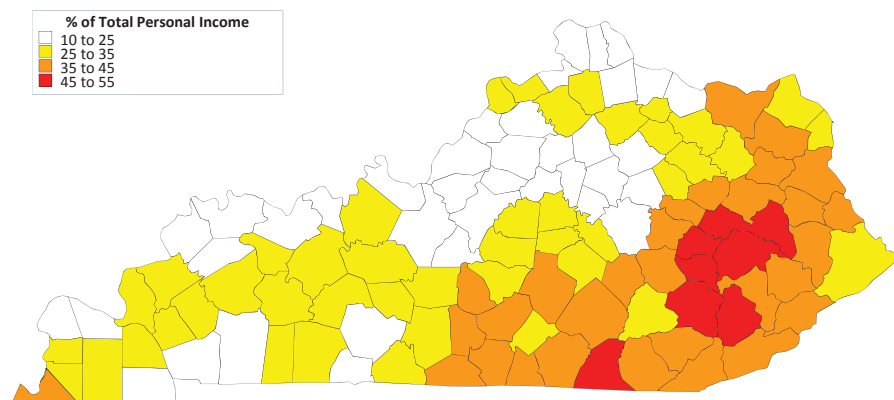


Source: U.S. Department of Agriculture Food and Nutrition Service and U.S. Census

TRANSFER PAYMENTS BY COUNTY

Transfer payments are benefits transferred from local, state, or federal governments to an individual. These payments include, but are not limited to, retirement and disability insurance benefits like Social Security, medical benefits such as those provided through Medicaid and Medicare, income maintenance benefits like TANF and SNAP, unemployment insurance compensation, and veterans' benefits. Transfer payments account for about 17 percent of total personal income for the nation—but several Kentucky counties are significantly higher than the national average. There are three counties over 50 percent and 23 counties where transfer payments account for over 40 percent of personal income. The percentages for Kentucky's metro, slightly rural, and mostly rural counties are, respectively, 18.3, 26.9, and 35.3, with the highest percentages concentrated in the Eastern Kentucky counties.

Transfer Payments by County, 2012

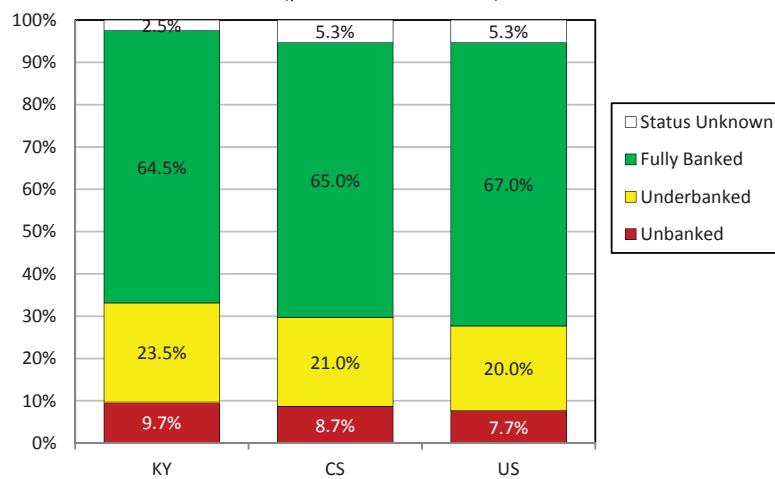


Source: Bureau of Economic Analysis

BANKING STATUS

Whether someone has a bank account can have important implications for their financial well-being. According to the Federal Deposit Insurance Corporation (FDIC), “access to an account at a federally insured institution provides households with the opportunity to conduct basic financial transactions, save for emergency and long-term security needs, and access credit on fair and affordable terms.” Moreover, it can help protect “households from theft and reduces their vulnerability to discriminatory or predatory lending practices.” Surveys done by FDIC find that low-to-moderate income Americans are less likely to “access mainstream financial products such as bank accounts and low-cost loans.” At 9.9 percent, Kentucky households are slightly more likely to be unbanked than either the competitor states (9.3%) or the U.S. (8.2%), and the same is true for being “underbanked,” which are households that use both traditional banks as well as alternative financial services.

**Household Banking Status, 2013,
Kentucky, Competitor States, and the U.S.**
(percent of households)



Source: FDIC National Survey of Unbanked and Underbanked Households, 2013

OVERVIEW

Educational outcomes are fundamentally tied to economic outcomes, as well as several other socially beneficial factors. As one climbs the educational ladder, the resulting economic benefits, such as higher income and lower unemployment, get larger, especially for those with a 4-year degree or higher. Likewise, there is a clear and consistent pattern with higher levels of education associated with better health, more volunteerism, and increased technology use—just to name a few other benefits. And what is generally good for the individual is also good for the wider community. For example, choosing from a list of 28 different factors, ranging from labor costs to environmental regulations, the single most important factor for respondents to the *28th Annual Survey of Corporate Executives and Consultants on Site Selection* was the availability of skilled labor, evidenced by 95 percent ranking it as either “important” or “very important.”

Kentucky’s educational status has improved on many measures. Based on multiple educational attainment and achievement factors combined into a single index, we estimate that Kentucky most likely ranks around 32nd, with a lower probability it could be as high as 22nd or as low as 40th. A rank of 32nd represents a marked improvement from 48th in 1990. The index shows that Kentucky has made educational improvements over the years and gained ground on other states.

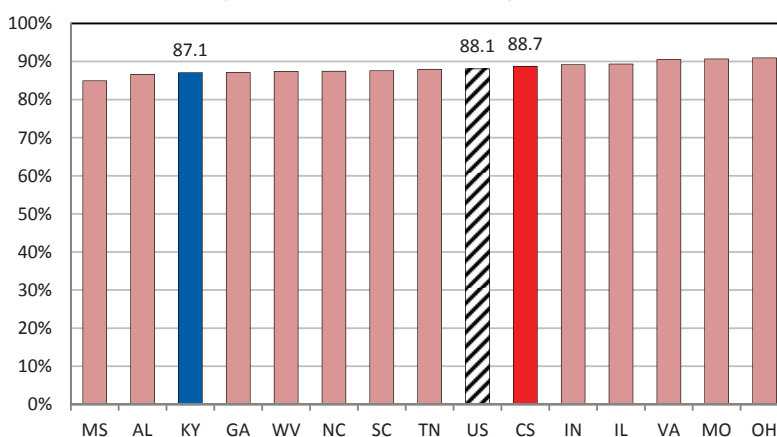
Despite these educational gains, the state faces many challenges. A 2014 study of the Kentucky educational system conducted by Picus Odden & Associates for the Council for Better Education, *Adequacy for Excellence in Kentucky*, concluded that Kentucky has underfunded its public education system—including teacher salaries—with mixed results on student achievement. Our own analysis conducted at the Center for Business and Economic Research suggests that Kentucky gets about average “bang for the buck” for its educational investments, but after controlling for several factors that are obstacles to educational progress, such as high poverty rates, Kentucky’s return on investment is one of the highest in the country.

Despite the state’s educational progress, there are substantial gaps between Kentucky and the competitor states and the U.S. in many areas—indicating there is still much work ahead. Moreover, while Kentucky has made substantial progress in the achievement levels of primary and secondary students, a renewed focus on disadvantaged students is warranted and the state still ranks low on measures likely to become more important in a high-tech global economy—such as the number of graduates with science and engineering degrees.

HIGH SCHOOL ATTAINMENT

Kentucky's labor force increasingly competes in a global environment that demands rising levels of educational attainment. At a minimum, today's workers need a high school diploma. Following the education reforms of the early 1990s, Kentucky's adult population (25 and older) made significant gains, as the portion with a high school diploma or higher rose from 65 percent in 1990 to 84.1 percent in 2013. At the same time, the nation improved to 86.6 percent, a statistically significant difference from Kentucky's 84.1 percent. Looking just at those individuals 25 to 64—the traditional working age group—Kentucky's 87.1 percent trails the U.S. average of 88.1 percent and the competitor state average of 88.7 percent. What's more, over the past 30 years, nation after nation has surpassed the United States in the portion of workforce entrants with the equivalent of a high school diploma. Still others are on the verge of doing so. Given that an nearly 13 percent of adults 25 to 64 lack a high school diploma or its equivalent, the state not only lags the nation but also fares poorly in the global context, a circumstance that must change if we are to achieve broader prosperity.

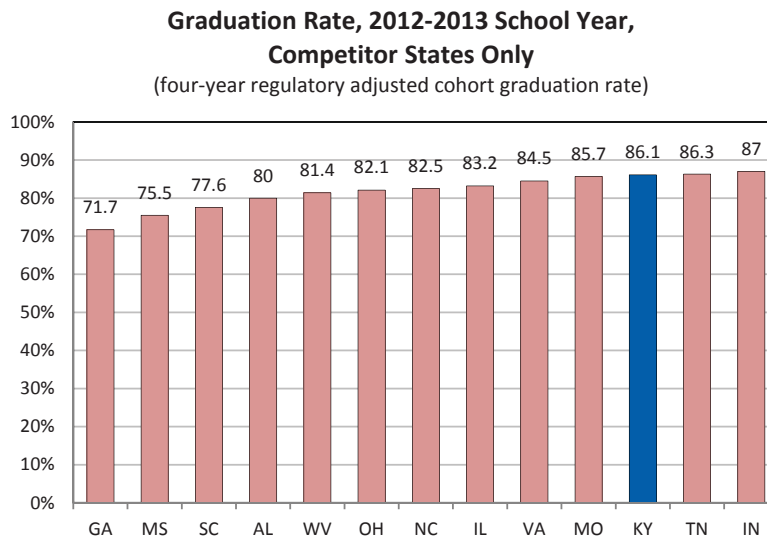
**High School Graduate or Higher,
Kentucky, Competitor States and the U.S., 2013**
(percent of individuals 25 to 64 years old)



Source: 2013 American Community Survey 1-Year Estimate
Note: CS is the weighted average of the competitor states.

HIGH SCHOOL GRADUATION RATE

There are important economic consequences of dropping out of high school—for the individual, of course, but also for the wider community. The U.S. Department of Education data shown in the figure below are the latest data for the competitor states and Kentucky, which are for the 2012-2013 school year. It is hoped these data will portray a more accurate measure of the high school graduation rate. The four-year adjusted cohort graduation rate (ACGR) is the number of students who graduate in four years with a regular high school diploma divided by the number of students who form the adjusted cohort for the graduating class. For example, beginning high school students form a cohort that is “adjusted” by adding any students who subsequently transfer into the cohort and subtracting any students who subsequently transfer out, emigrate to another country, or die. As one can see by the figure, Kentucky is well positioned among the competitor states. At 89.7 percent Iowa has the highest ACGR in the country while Oregon has the lowest at 68.7 percent.

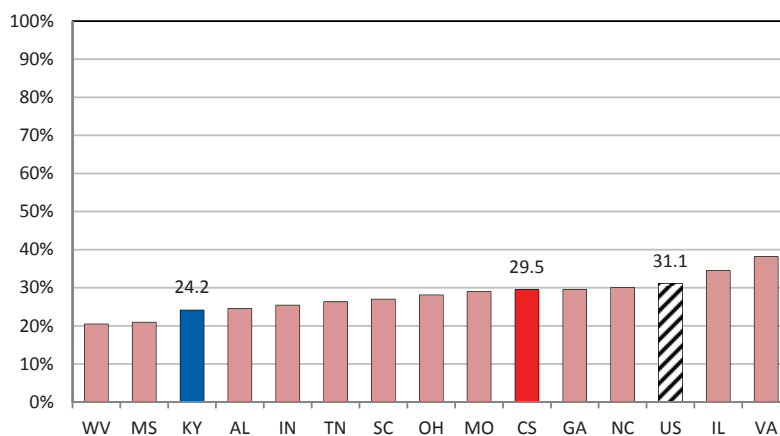


Source: U.S. Department of Education

COLLEGE ATTAINMENT

In an increasingly interconnected and technologically advanced world, Kentucky workers not only face growing competition for low-wage, low-skill jobs, but also for high-skill jobs. Today, any “routine” job and a growing number of high-skill jobs can be automated and outsourced. Competition in such an environment requires providing something that others cannot. That “something” will come from workers who have high levels of preparation in math and science in particular, as well as the liberal arts. Essentially, the rigors of the global economy require creative, highly-skilled, college-educated workers. Since 1990, Kentucky has made important progress, as the proportion of adults 25 and older with a four-year degree or higher climbed from 13.6 percent to 22.6 percent in 2013; by comparison, the U.S. percentage in 2013 was 29.6. Among working age adults 25 to 64, however, the state continues to significantly lag the competitor states and the nation in educational attainment at the college level—24.2 percent for Kentucky compared to 29.5 and 31.1 percent for the competitor states and U.S. respectively.

**Bachelor's Degree or Higher,
Kentucky, Competitor States and the U.S., 2013**
(percent of individuals 25 to 64 years old)

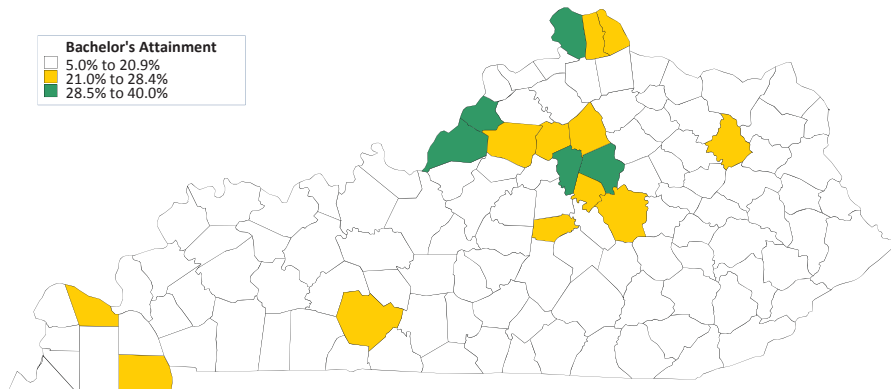


Source: 2013 American Community Survey 1-Year Estimates
Note: CS is the weighted average of the competitor states.

COLLEGE ATTAINMENT BY COUNTY

There are five Kentucky counties where the percentage of the population with a bachelor's degree or higher (using the 2008-2012 five-year average) exceeds the U.S. average of 28.5 percent. These five counties anchor the so-called urban triangle—Fayette (39.9%), Oldham (39.3%), Woodford (30.1%), Jefferson (29.8%), and Boone (28.9%). There are twelve counties that are above the Kentucky average of 21 percent but below the U.S. average—ranging from McCracken County's 21.2 percent to Calloway and Kenton Counties at 28.1 percent. Kentucky's remaining 103 counties are below the Kentucky average, with several in the single digits. Similarly, the concentration of educational attainment in metro areas is illustrated by the percentage of the population 25 and older who have some college—but not a four-year degree, or they have an associate's degree. The percentage of this age group in this educational category is 29.6 percent in the metro counties, compared to 26.4 percent in somewhat rural counties and 23 percent in mostly rural counties; the statewide percentage is 27.4. It is extremely difficult for any geographic region—whether a city, a county, a state, or a country—to be globally competitive without a skilled and educated population.

Bachelor's Degree and Higher, 2008-2012
(percentage of adults 25 and older)

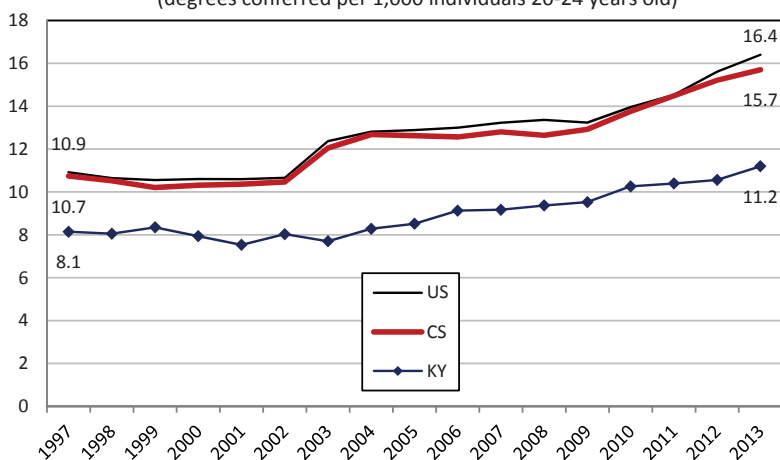


Source: U.S. Census Bureau, American Community Survey, 5-Year Estimate

SCIENCE AND ENGINEERING GRADUATES

Staying competitive in the global economy depends upon many things—including continuous innovation in products and services. An essential element for innovation is having a high-skilled workforce with science, technology, engineering, and mathematics (STEM) training and expertise. This point was reinforced by the November 2013 BEAM report, *Seizing the Manufacturing Moment: An Economic Growth Plan for the Bluegrass Economic Advancement Movement*. While remaining substantially below the competitor states and the U.S., the number of science and engineering degrees conferred on individuals 20 to 24 years old in Kentucky has increased since 1997—from 8.1 per 1,000 individuals in this age group to 11.2. By comparison, the competitor states (15.7) and the U.S. (16.4) awarded significantly more STEM-designated bachelor's degrees in 2013.

**STEM-Designated Bachelor's Degrees Awarded,
Kentucky, Competitor States, and the U.S., 1997-2013**
(degrees conferred per 1,000 individuals 20-24 years old)



Source: Author's analysis of Integrated Postsecondary Education Data System (IPEDS) data using 2013 designated CIP Codes to identify STEM degrees & U.S. Census data for population estimates

PERFORMANCE TEST SCORES

The National Assessment of Educational Progress (NAEP), commonly known as the “Nation’s Report Card,” gauges student progress in a variety of subject areas, including reading, mathematics, and science. Here we present the test results for 4th and 8th graders from 1998 to 2013. The percentages of Kentucky 4th and 8th graders scoring proficient or higher on the NAEP exams have steadily increased over the years. In 2013 the percentages of Kentucky 4th and 8th graders scoring at or above proficient for reading (36 and 38 respectively) was about the same as the U.S. average for 4th graders but statistically significantly higher for 8th graders. The proficiency percentages for Kentucky 4th and 8th graders in math (42 and 30) were statistically no different from the U.S. for 4th graders but statistically significantly lower for 8th graders. Kentucky’s 8th graders outperformed U.S. 8th graders in 2011 on the science test with 34 percent scoring proficient or higher, a percentage statistically significantly higher than the U.S.

**Kentucky’s Math, Reading, and Science NAEP Results,
Percentage Scoring Proficient or Higher,
By Subject, Grade, and Year**

	1998 2000	2002	2003	2005	2007	2009	2011	2013
Math 4	17 [↓]	-	22 [↓]	26 [↓]	31 [↓]	37	39	42
Math 8	20 [↓]	-	24 [↓]	23 [↓]	27 [↓]	27 [↓]	31 [↓]	30 [↓]
Reading 4	29 [*]	30	31	31	33	36 [↑]	35	36
Reading 8	30 [*]	32	34	31	28	33	36 [↑]	38 [↑]
Science 4	-	-	-	-	-	45 [↑]	-	-
Science 8	-	-	-	-	-	34 [↑]	34 [↑]	-

Source: National Center for Education Statistics (NCES), Institute of Educational Sciences (IES), National Assessment of Educational Progress (NAEP), Kentucky State Profile.

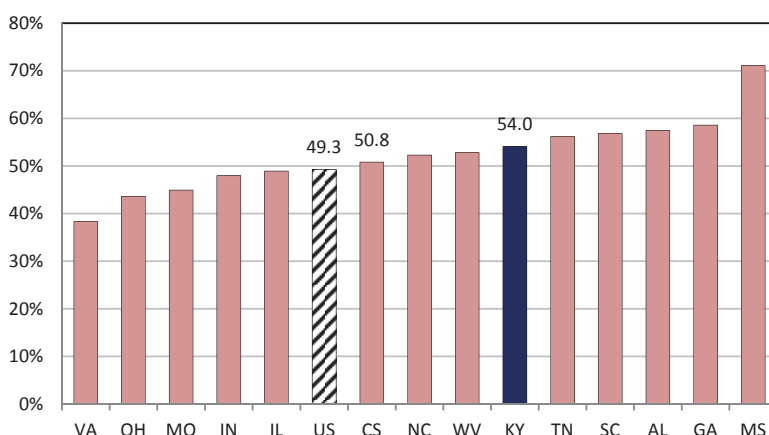
Note: A dash (-) in the cell indicates that this test was not taken by Kentucky students. An arrow pointed down ([↓]) next to a number indicates that the percentage is statistically significantly lower than the National public percentage. Conversely, an arrow pointed up ([↑]) next to a number indicates that the percentage is significantly higher. No arrow indicates that the Kentucky percentage is not significantly different from the National public.

*The reading results in the 1998/2000 column are 1998 results. The math results are from 2000.

FREE AND REDUCED-LUNCH ELIGIBILITY

Students here, like those nationally, who are eligible for free- or reduced-priced lunch, on average, do not score as high on, for example, the National Assessment of Educational Progress (NAEP), as those not eligible; the same is true for Kentucky's various state-specific assessment tools, such as the Commonwealth Accountability Testing System (CATS), which was replaced during the 2011-12 academic year with a new system—Kentucky Performance Rating for Educational Progress (K-PREP). Regardless of the assessment system, less-advantaged students do not perform as well, on average, as more-advantaged students. Researchers at organizations like the Education Trust, for example, have examined the underlying reasons for the achievement gap and identified several systemic causes. A student's eligibility for the so-called free-lunch program is determined by household income and size. During the 2011-2012 school year, Kentucky ranked 12th nationally with 54 percent of public school students eligible for free- or reduced-priced lunch. The national average is 49.3 percent and the average for the competitor states is 50.8. Among the 50 states, Mississippi has the highest percentage at 71.1 percent while New Hampshire has the lowest at 26.3 percent.

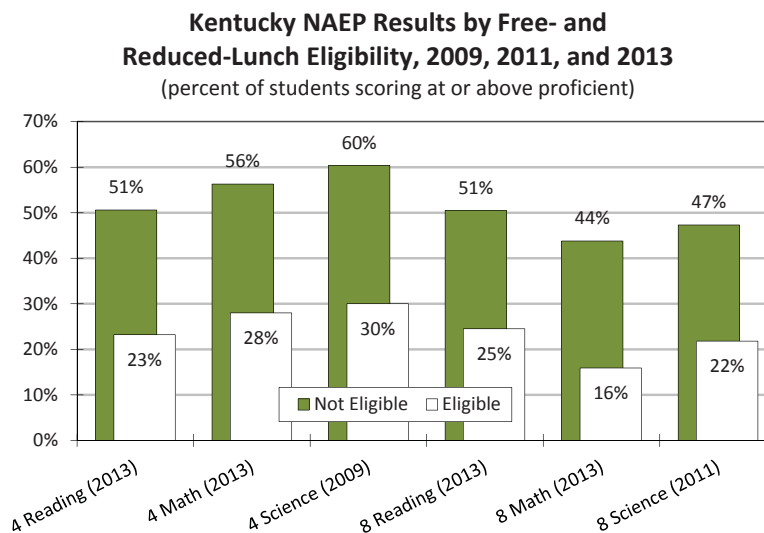
**Students Eligible for Free or Reduced-Price Lunch,
2011-12, Kentucky, Competitor States, and the U.S.**
(percent of public school students, school year 2011-12)



Source: Derived from the U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey", 2011-12 v.1a; "State Nonfiscal Public Elementary/Secondary Education Survey", 2011-12 v.1a.

EDUCATIONAL ACHIEVEMENT GAP

The academic success of disadvantaged children will affect whether Kentucky's future remains one of disproportionate poverty or gives way to rising prosperity. Economic disadvantage has a significant negative drag on academic performance, and the sheer number of economically disadvantaged students in Kentucky adversely affects overall performance on both state and national tests. Kentucky has the nation's seventh highest population of students eligible for free or reduced-price (56.5 percent) lunches, a reliable proxy for poverty and need. The different outcomes on the National Assessment of Educational Progress (NAEP) exams are stark. The percentage of students scoring at or above proficiency is consistently and markedly lower for less-advantaged students in every subject area. Were we to close the substantial academic gaps associated with inequities, Kentucky students would be performing at dramatically higher levels relative to their national peers and our goals for education would be nearly realized. NAEP results for Kentucky students in math, reading, and science—for both 4th and 8th grades—illustrate the challenges and the necessity for an effective response. Proficiency levels for less-advantaged students are generally less than half the level of more-advantaged students.

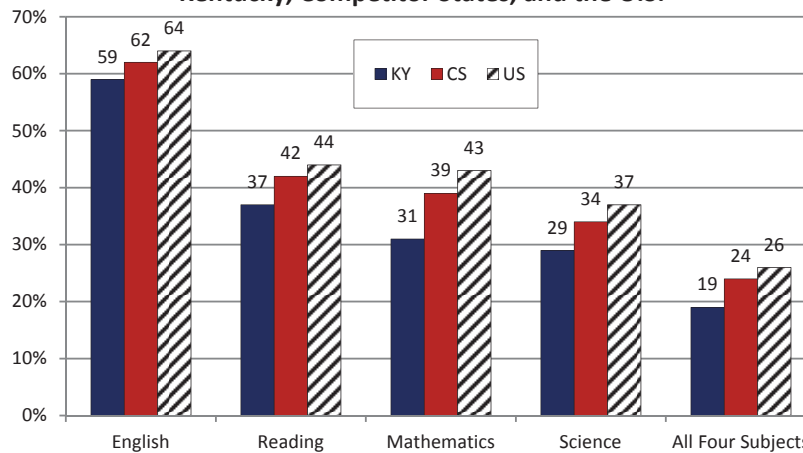


Source: National Center for Education Statistics

COLLEGE READINESS

While only 19 percent of Kentucky's recent high school graduates are considered "college ready" in all four of the tested subjects—English, reading, mathematics, and science—the percentage has been increasing since 2010. According to the Kentucky Department of Education, "From 2010 to 2014, Kentucky public school students registered from a half-point to more than a full-point gain in every subject and nearly a one-point improvement in the overall composite score—up to 19.9 on a 36-point scale." By comparison, student performance nationally stayed more or less unchanged. The national composite ACT score is 21.1, up only one-tenth of a point from 2010. The percentage of students nationally and in the competitor states who are "college ready" in all four subjects is higher than in Kentucky, 26 and 24 percent respectively, which is unchanged from 2013. Kentucky's percentage, on the other hand, improved from 18% to 19%. It should be noted that one reason for Kentucky's lower percentage is that since 2009 state law mandates that every 11th grader take the ACT—even those who have no interest or intention of going to college. In contrast, 75 percent of the graduating class in the competitor states and 57 percent nationally took the ACT in 2014.

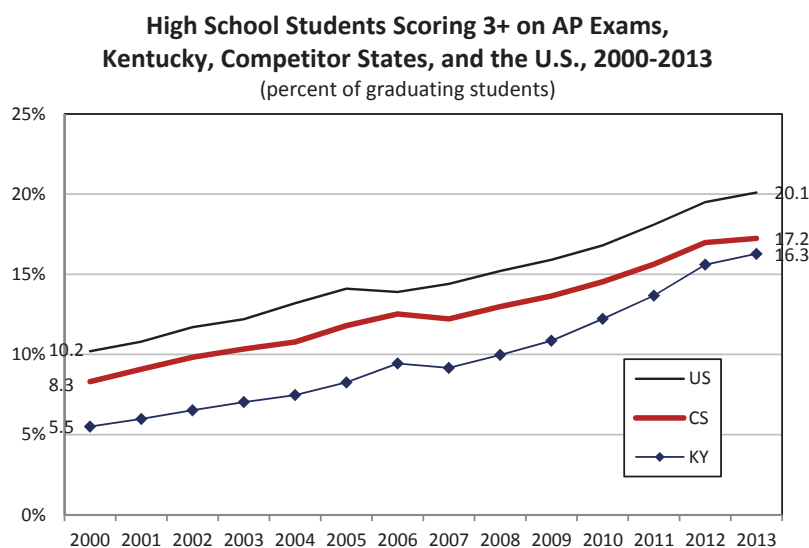
Percent of 2014 ACT-Tested High School Graduates Meeting College Readiness Benchmarks by Subject, Kentucky, Competitor States, and the U.S.



Source: *The Condition of College & Career Readiness, 2014, various state reports, ACT, Inc.*

ADVANCED PLACEMENT EXAM MASTERY

In order to pass an AP Examination, a high school student must demonstrate mastery of college-level material. Indeed, many colleges and universities award college credit for students showing AP mastery (scoring 3+ on an exam). At a time when a large percentage of first-year undergraduates are taking remedial classes (20 percent nationally in the 2007-08 academic year), it is vitally important for high school students to be challenged academically and perform at a high level. The College Board, which administers the advanced placement program, offers 36 different AP Exams each spring on subjects ranging from Art History to Calculus to Chemistry. In 2013 there were 1,003,430 graduates leaving high school who took an AP Exam, with 607,505 of these graduates scoring a 3 or higher on an AP Exam at any point in high school—which represents 20.1 percent of America’s graduating high school students. This is a substantial increase from the 10.2 percent in 2000. Kentucky’s students have also increased their performance on AP Exams over the years, from 5.5 percent in 2000 to 16.3 percent in 2013. Despite this increase, Kentucky still lags the competitor states’ 17.2 percent. Among all states Maryland had the highest percentage of students in the class of 2013 scoring a 3 or higher on an AP Exam during high school—29.6 percent.



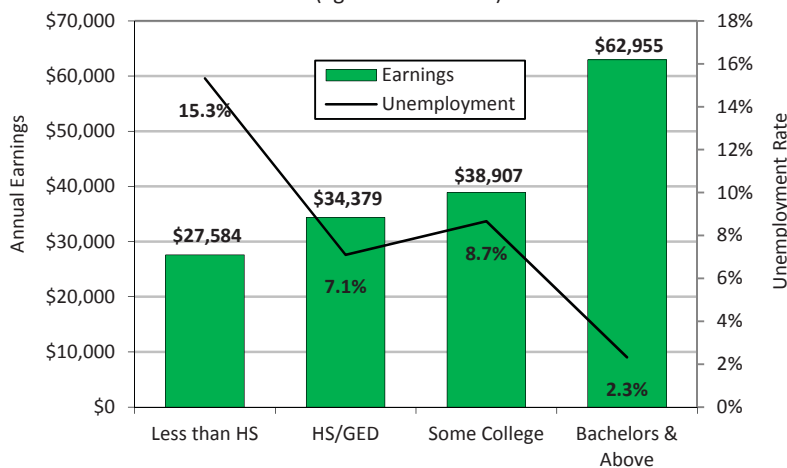
Source: College Board, AP Report to the Nation, various years

EARNINGS & EMPLOYMENT BY EDUCATION

Despite the rising cost of postsecondary education, education still pays. Moreover, according to the Kentucky Council on Postsecondary Education, an estimated 56 percent of Kentucky's jobs will require some college by 2020. On average, increasing education translates into higher earnings and better prospects for employment. Here we show the unemployment rates and earnings for individuals 25 years and older in Kentucky for four broad education groups: individuals with less than a high school degree, individuals with a high school degree only, individuals with some college (including associates degrees), and individuals with at least a bachelor's degree; these data are pooled from 2012 to 2014. Individuals 25 years and older are chosen because most individuals have completed schooling by age 25. The unemployment rate for those without a high school degree was around 15 percent—compared to 2.3 percent for those with at least a 4-year degree. Likewise, earnings for the least educated were substantially lower than those with a bachelor's degree. Workers with only a high school diploma in Kentucky earned, on average, about \$34,400, compared to approximately \$63,000 for those with at least a bachelor's degree.

**Kentucky Earnings and Unemployment by Education,
2012-2014**

(aged 25 and older)



Source: Author's analysis of Current Population Survey (CPS), March 2012, 2013, and 2014 pooled data

HEALTH OUTCOMES BY EDUCATION

Improving educational attainment and achievement in general and health literacy in particular, defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions,” will determine whether the health of Kentuckians shows significant improvements. Reading and understanding prescription labels, doctor’s instructions, nutrition information, or basic health literature is essential for good health. Indeed, research confirms what commonsense suggests—higher levels of education attainment and enhanced health literacy are associated with improved health outcomes. Enhanced knowledge can lead to better health outcomes. Evidenced by data from the Behavioral Risk Factor Surveillance System (BRFSS), increasing levels of educational attainment—a good proxy for health literacy and knowledge—are generally associated with better health behaviors. As education levels increase, the rate of poor or fair health, obesity, diabetes, and heart disease declines. Moreover, this relationship remains strong while controlling for other socioeconomic factors like income, race, ethnicity, and gender.

EDUCATION

Selected Health Outcomes, Kentucky, 2011-2013 (percent of adult population)					
Education Level	Fair/Poor Health Status	Obese	Diabetes	Angina or Heart Disease	Activity Limitation
Less than H.S.	45.7	33.8	15.5	9.9	39.8
H.S. or G.E.D.	24.6	33.0	11.9	6.3	27.9
Some Post H.S.	16.8	32.6	10.9	4.8	24.4
College Graduate	8.8	25.7	8.0	3.6	17.9
All Levels	23.3	31.7	11.5	6.0	27.1
Source: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, various years.					

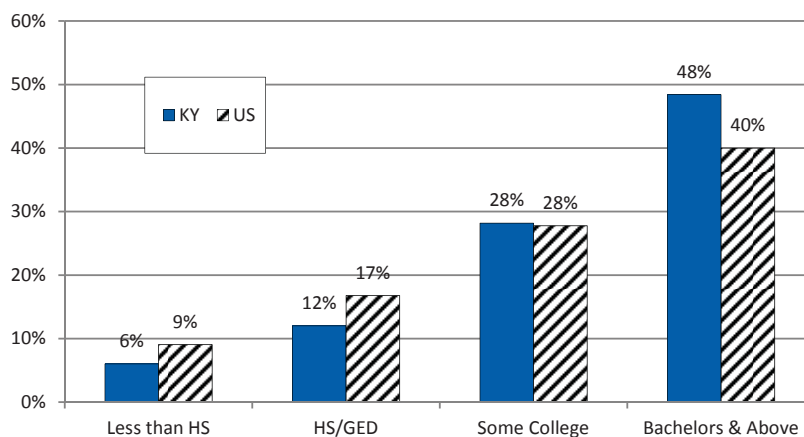
VOLUNTEER RATE BY EDUCATION

In the Community section of this report we present data on volunteer rates for Kentucky, its competitor states, and the U.S., and discuss some of the social and economic benefits that result from high levels of community service and volunteerism. In the figure below we present volunteer rates for Kentucky and the U.S. for four broad education groups (focusing on adults 25 and older): individuals with less than a high school degree, individuals with a high school degree only, individuals with some college (including associates degrees), and individuals with at least a bachelor's degree. Kentucky's volunteer rates are higher than the U.S. for all of the education categories except for those individuals with less than a high school diploma. Also, there is a clear and consistent relationship between increasing education levels and higher rates of volunteerism. Kentuckians with high school diplomas volunteer, on average, at a rate of 21 percent, which is about half the rate of those with a 4-year college degree—46 percent.

Volunteer Rate by Education, 2013

Kentucky and the U.S.

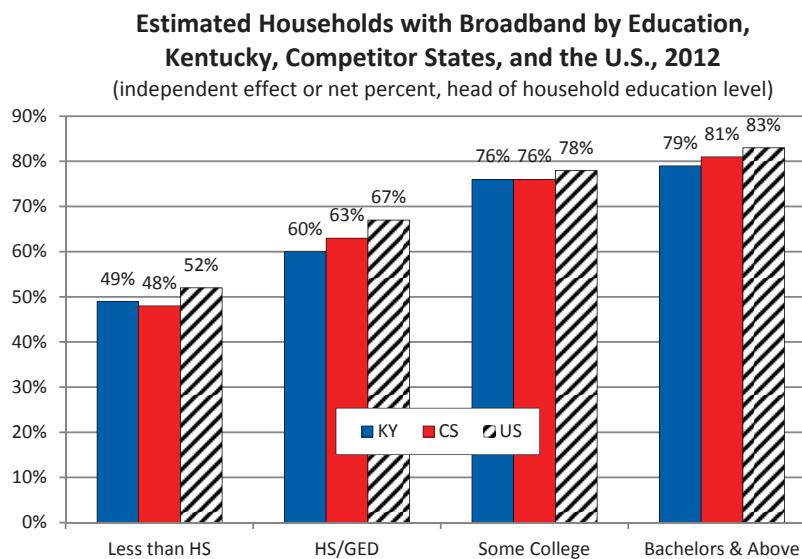
(percentage 25 and older who volunteer during the year)



Source: Author's analysis of September 2013 Current Population Survey (CPS) Volunteer Supplement data

TECHNOLOGY USE BY EDUCATION

Research shows that because the Internet permeates so many aspects of our lives, access to and use of it appear to be increasingly important for anyone becoming politically informed, socially integrated, and economically successful in the Information Age. Studies suggest that “Internet use increases employment and income, enhances consumer welfare, and promotes civic engagement,” (NTIA, 2013), and that enhancing the nation’s broadband infrastructure can improve innovation, entrepreneurship, and productivity. The importance of high-speed Internet access promises to become even more important in the future as online education becomes more firmly rooted. Recent analysis conducted by CBER shows that the independent effect of education is strong. For example, Kentucky households where the head of household has a bachelor’s degree or higher have a much higher probability of having high-speed Internet in their home (79%) than a household where the head of household has a high school diploma (60%). This relationship is consistent across all levels of education and all geographic regions shown.



Source: "The Internet in Kentucky," CBER Issue Brief 9, Table 2, September 2013

OVERVIEW

THE GLOBAL ENERGY MARKET IS CHANGING RAPIDLY—SOMETHING that is self-evident to anyone who has pumped gasoline recently. According to the U.S. Energy Information Administration, the average cost of a gallon of gasoline (all grades, conventional retail price) was \$3.51 in 2013. The average price from the beginning of June 2014 to mid-December is \$3.34, and during the week of December 15, 2014, it dropped to \$2.59, the lowest level since October 2009, or over five years ago.

While technological improvements are stimulating increased oil and gas extraction—helping to push down gasoline prices, the price of natural gas and environmental concerns are dampening the demand for coal. At the same time, concerns over global warming are sparking conversations about the future of nuclear power as well as motivating governments, academics, and the private sector to explore renewable energy sources. All of this has caused major changes in energy and economic policies across the globe—importers are becoming exporters, and vice versa. Indeed, according to a recent report from the Paris-based International Energy Agency, entitled *World Energy Outlook*, “the United States moves steadily towards meeting all of its energy needs from domestic resources by 2035.” In fact, the amount of oil production in the United States is leading some to call on Congress to overturn the ban on exporting U.S. crude oil that has been in place since the Arab oil embargo in the 1970s.

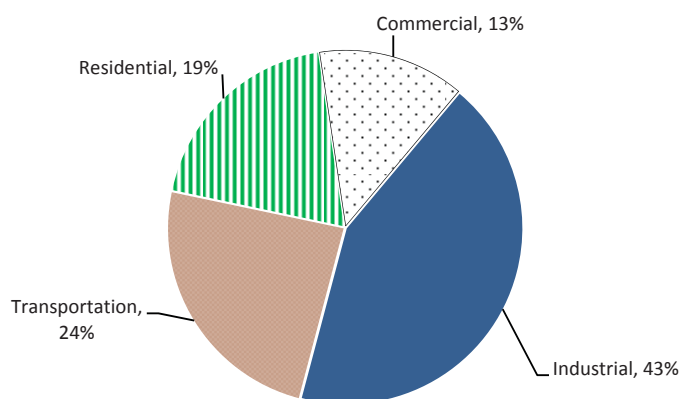
While the global demand for natural gas is expected to remain strong at least until 2035, the outlook for coal is less certain. According to one scenario presented in the *World Energy Outlook*, “global coal demand increases by 15% to 2040, but almost two-thirds of the increase occurs over the next ten years.” In 2011 coal was the major supplier of the world’s total primary energy, but energy forecasters expect natural gas to supplant coal as the world’s dominant source of primary energy by 2035. Affordable coal-fired electricity has allowed Kentucky to attract energy-intensive industries, but changes in the state’s energy consumption are increasing the price of electricity, something that could affect the manufacturing sector—which employs more than 220,000 workers.

Here we examine Kentucky’s energy utilization by sector and source, costs for industrial and retail customers, and the amount of energy used in the state’s economy. In many cases we provide comparative data—either showing Kentucky over time or relative to other states. This selective examination of energy in Kentucky broadly illustrates its place—and importance—in the state’s economy.

ENERGY CONSUMPTION BY END-USE SECTOR

Energy consumption is categorized into four broad sectors: industrial, commercial, residential, and transportation. Industry consumes the bulk of energy in Kentucky, accounting for 43 percent of the total consumption (2012). According to the Kentucky Department for Energy Development and Independence, *2011 Energy Profile*, “the location of heavy industry operations, such as steel and aluminum production, and automotive manufacturing accounted for the significance and energy requirements of the industrial sector in Kentucky.” By comparison, industrial consumption by the competitor states and the U.S. as a percentage of total energy consumption is 31 and 33 percent, respectively. The transportation sector in Kentucky is the second largest consumer of energy, accounting for 24 percent, compared to 27 and 28 percent in the competitor states and the U.S. The residential sector in Kentucky, the competitor states, and the U.S., consumes 19, 23, and 21 percent. And while the commercial sector in Kentucky accounts for only 13 percent, it represents 18 percent of total energy consumption for the competitor states and the U.S.

Kentucky Energy Consumption by End-Use Sector, 2012

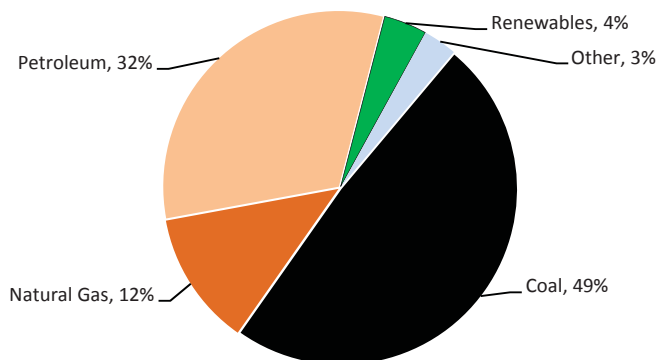


Source: U.S. Energy Information Administration, State Energy Data System

ENERGY CONSUMPTION BY SOURCE

Of the four broad energy sources used in Kentucky—coal, natural gas, petroleum, and renewables—coal accounts for half of the total consumption, 49 percent (2012). This is a decline from 52 percent in 2011. According to the Kentucky Department for Energy Development and Independence, *2011 Energy Profile*, “the predominance of coal in sourcing energy consumption was linked to the generation of electricity and manufacturing processes in the Commonwealth.” By comparison, coal consumption by the competitor states and the U.S. as a percentage of total energy consumption is 27 and 18 percent, respectively, and is declining. Petroleum products, such as gasoline and diesel, account for the second largest percentage in Kentucky, 32 percent. Natural gas is about 12 percent in Kentucky, but much higher and rising in the U.S. (27%) as well as in the competitor states (22%). Renewable energy sources account for about 4 percent in Kentucky, 6.7 percent in the competitor states, and 9 percent in the U.S. Finally, while Kentucky does not have nuclear power, this is an important source of energy in the competitor states (13.5%) and the U.S. (8.5%). The competitor states and the U.S. overall are moving away from coal and toward natural gas.

Kentucky Energy Consumption by Source, 2012
(consumption by fuel type)

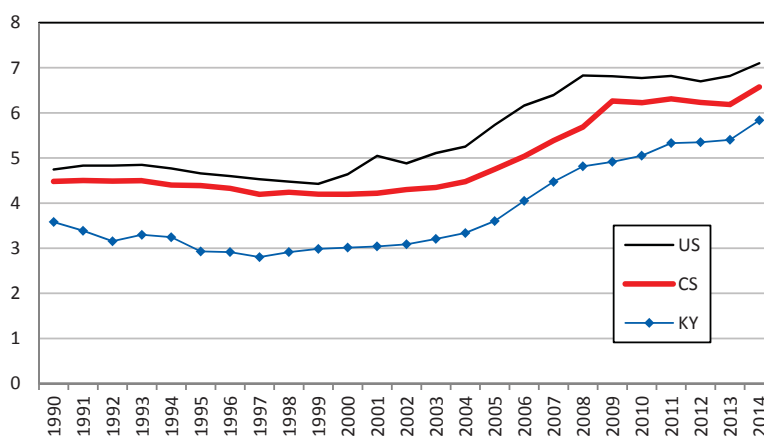


Source: U.S. Energy Information Administration, *State Energy Data 2012, Consumption*

ELECTRICITY COST FOR INDUSTRIAL CUSTOMERS

Frequently cited as an important factor to recruit new industries to Kentucky as well as keep existing industries competitive, electricity prices here are consistently below the U.S. and competitor state averages. Kentucky's industrial rates are lower because of an abundance of coal and coal-fired power plants in the state and region. However, the average retail price of electricity to industrial customers increased in Kentucky by 108 percent from its nadir of 2.8 cents in 1997 to 5.8 cents in the first eight months of 2014. As prices have increased so too have the worries that Kentucky is losing its comparative advantage in low-cost utility rates. Nonetheless, in 1990 Kentucky had the seventh lowest industrial rate in the country and in 2013 the fourth lowest. Kentucky's annual rate in 2013—at 5.4 cents per kilowatt-hour—was well below the U.S. (6.8) and competitor states (6.2).

Average Retail Price of Electricity, Industrial Customers, Kentucky, Competitor States, and the U.S., 1990-2014*
(Cents per Kilowatt-Hour)



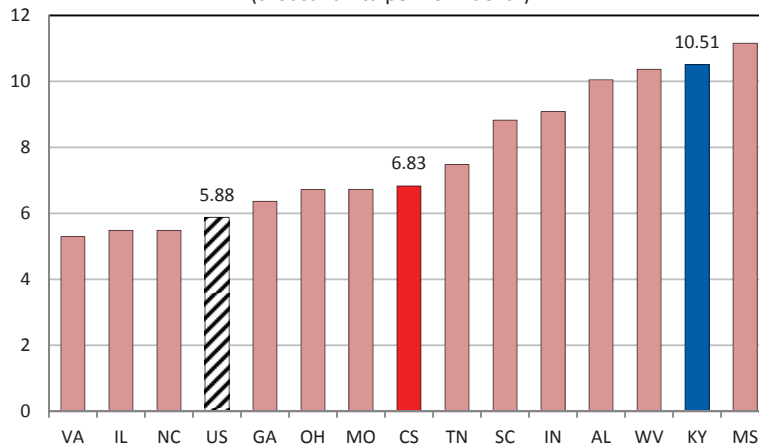
Source: U.S. Energy Information Administration

*2014 data represents January to August

ENERGY CONSUMPTION PER GDP

Kentucky has an energy intensive economy. To generate \$1 in state gross domestic product, Kentucky consumes about 10,500 Btu (2012). By comparison, the U.S. average is around 5,900 Btu and the competitor state average is 6,800 Btu. This difference is driven, in part, by Kentucky's larger than average manufacturing sector, which, of course, depends greatly upon energy as an input. One implication of this higher dependence on energy as an economic input is that, compared to most of the competitor states, Kentucky's economy is more sensitive to energy prices.

**Energy Consumption per Real Dollar of GDP, 2012,
Kentucky, Competitor States, and the U.S.**
(thousand Btu per 2012 dollar)

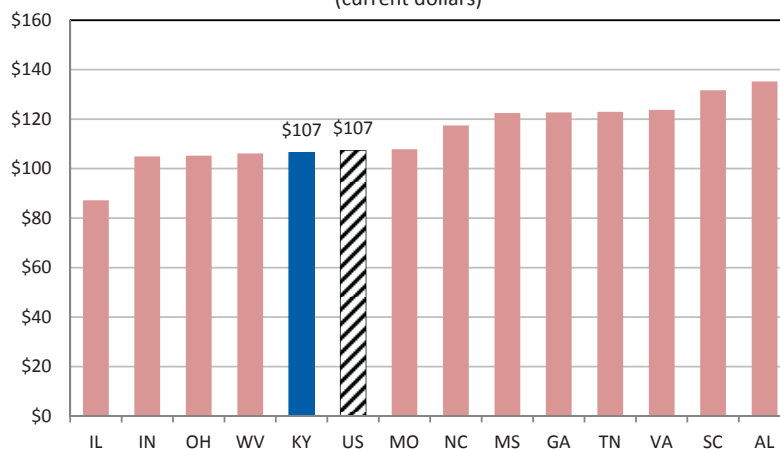


Source: U.S. Energy Information Administration and Bureau of Economic Analysis

RESIDENTIAL ELECTRICITY COSTS

According to the U.S. Census Bureau, Consumer Expenditure Survey, the typical “consumer unit” had \$51,422 in average annual expenditures in 2012—with annual electricity expenses of \$1,388. In the South Region of the U.S.—where Kentucky and eight of the competitor states are located—average annual expenditures were \$47,757 and annual electricity expenses were \$1,625. Electricity costs range in these two examples from 2.7 to 3.4 percent of total expenditures. Using data from the U.S. Energy Information Administration, residential average monthly electricity bills, among the competitor states, ranged from a low of \$87 in Illinois to a high of \$135 in Alabama. At \$107, Kentucky’s average monthly bill is the same as the U.S. average. Like industrial customers of electricity, Kentucky’s residential customers enjoy somewhat lower rates.

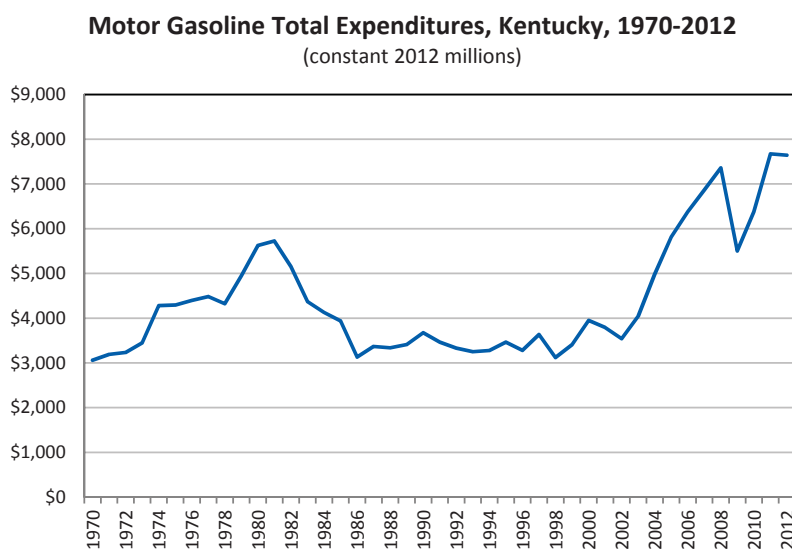
**Residential Average Monthly Electricity Bill, 2012,
Kentucky, Competitor States, and the U.S.**
(current dollars)



Source: U.S. Energy Information Administration

MOTOR GASOLINE EXPENDITURES

The typical American “consumer unit,” what most would consider the average household, spent \$51,100 on various products and services in 2013 according to the Consumer Expenditure Survey; “gasoline and motor oil” accounted for \$2,611 of the total—about 5.1 percent of the total; this represents a decline from the 5.4 percent in 2012. Going back as far as 1984, there is no practical difference between what citizens in Kentucky, the competitor states, or any other state, pay for gasoline. The amount spent by Kentuckians in 2012 and 2013, the most recent years these data are available, was at about its highest point going back to 1970 (in constant 2012 dollars). However, since 2012 gasoline prices have fallen. In 2012 the average price of a gallon of gasoline nationally was about \$3.68. In the first eleven months of 2014 the average price has been around \$3.51.

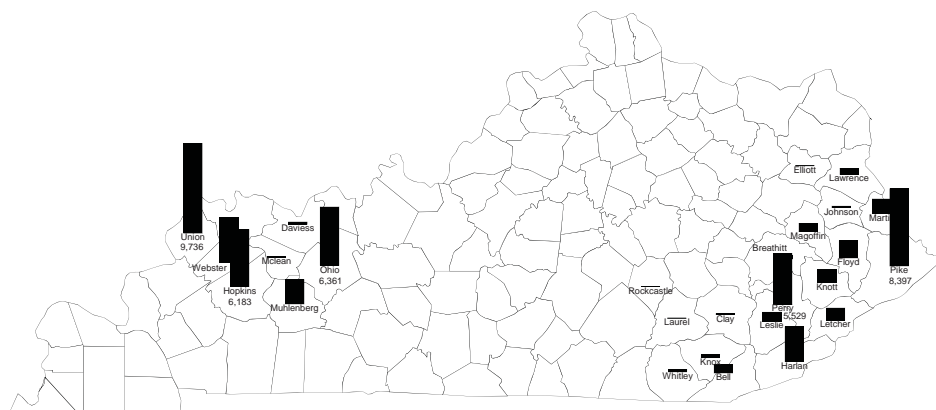


Source: Energy Information Administration, State Energy Data System

COAL PRODUCTION

The changing economics of the coal industry have been widely publicized. Cheaper sources of energy, like natural gas, and more stringent environmental regulations, are leading to decreases in the amount of coal produced in Kentucky, especially in Eastern Kentucky. Pike and Perry Counties accounted for 23.4 percent of the coal production in the first three quarters of 2014, while three counties in Western Kentucky—Union, Ohio and Hopkins—accounted for 37.5 percent of the state total. While coal was mined from 26 Kentucky counties from January to September 2014, these five counties accounted for 61 percent, or well over half of the total coal produced. Overall, the total coal tonnage is split more or less evenly between eastern and western Kentucky. Statewide coal production declined from 108.8 million short tons in 2011 to 90.9 in 2012—a decline of 16.5 percent. This decline has continued into 2013 with coal production down about 12 percent to 80.6 tons. In the first three quarters of 2014 Kentucky’s coal production is down 2.5 percent compared to the first three quarters of 2013.

Kentucky Coal Production, by County, 2014
January to September (Q1 to Q3)
 (thousands of short tons)



Source: Kentucky Quarterly Coal Report, Kentucky Energy and Environment Cabinet

OVERVIEW

PUBLIC POLICY DEBATES ABOUT THE CURRENT AND FUTURE status of Kentucky's coal industry exemplify the inextricable connections between the state's economy, national environmental considerations, and global energy markets. Our economic development policies and practices can, and do, affect the quality of the air, water, land, and other environmental assets of the state. At the same time, a body of literature has emerged demonstrating how community amenities, such as a clean and beautiful environment, can be used as a tool for attracting and retaining entrepreneurs and innovators—who can also be job creators.

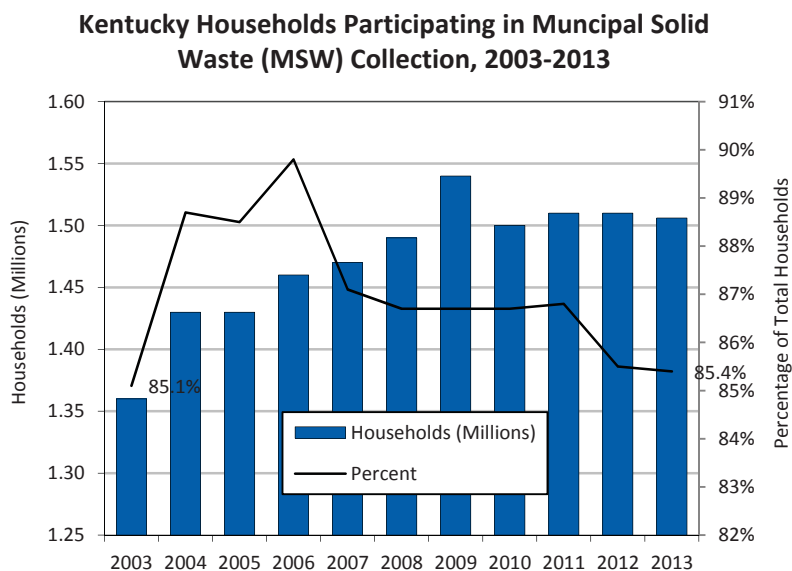
Environmental regulations are important considerations for CEOs exploring sites for industrial expansion or relocation. For example, choosing from a list of 28 different factors, ranging from labor costs to environmental regulations, the single most important factor for respondents to the *28th Annual Survey of Corporate Executives and Consultants on Site Selection* was the availability of skilled labor, evidenced by 95 percent ranking it as either “important” or “very important.” By comparison, “environmental regulations” ranked 17th on the list at 72 percent while “energy availability and costs” ranked 10th with 81 percent indicating it was important or very important.

At a time when the broad-based threats to the environment resulting from climate change appear to be gaining traction as an important public-policy issue around the globe, the typical Kentuckian is breathing cleaner air, drinking cleaner water, and being more responsible with solid waste than ever before. Our state still has areas that are currently designated nonattainment or marginal areas for all criteria pollutants by the U.S. Environmental Protection Agency (EPA)—Boone, Bullitt, Campbell, Jefferson, and Kenton Counties, which includes about 28 percent of the state's total population. And cancer-causing toxic releases here compare poorly to competitor states as well as the U.S. overall, while out-of-state solid waste disposal is a growing portion of the total amount of garbage dumped in our landfills.

Arguably, however, many of the environmental quality trends are moving in the right direction. The data presented here show progress and promise, but also considerable room for improvement in Kentucky's environmental quality.

SOLID WASTE

Beginning in 2002 state law required waste haulers and recycling haulers to register and report to each county in which they provide service, thereby providing data on the number of households that participate in municipal solid waste collection (MSW). The 2013 statewide household participation rate for MSW collection was 85.4 percent. The Kentucky Division of Waste Management (DWM) estimates that another 5-10 percent of households either legally self-haul their waste to transfer stations or are otherwise not counted in these numbers because they use dumpsters in multiunit housing complexes. Consequently, the real percentage of households participating in municipal solid waste collections is likely 90 to 95 percent according to the DWM. The remaining 5 to 10 percent of households are thought to illegally dump their waste.

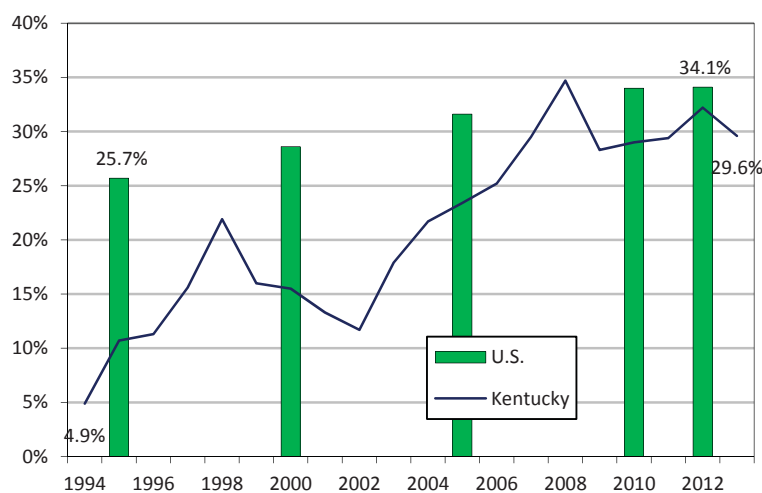


Source: Kentucky Division of Waste Management Annual Reports, various years

RECYCLING

According to the Kentucky Division of Waste Management, Kentuckians recycled 29.6 percent of common household recyclables in 2013 (e.g., aluminum, cardboard, steel, plastic, newspaper, glass, and paper). They also recycled 34.9 percent of all municipal solid waste in 2013, which includes sludge, concrete, compost, and asphalt in addition to the common household recyclables. As one can see in the figure, the percentage of generated waste that is recycled has climbed steadily over the last two decades.

Recycling Rates, Kentucky and the U.S., 1994-2013
(As a Percentage of Waste Generated in Kentucky)

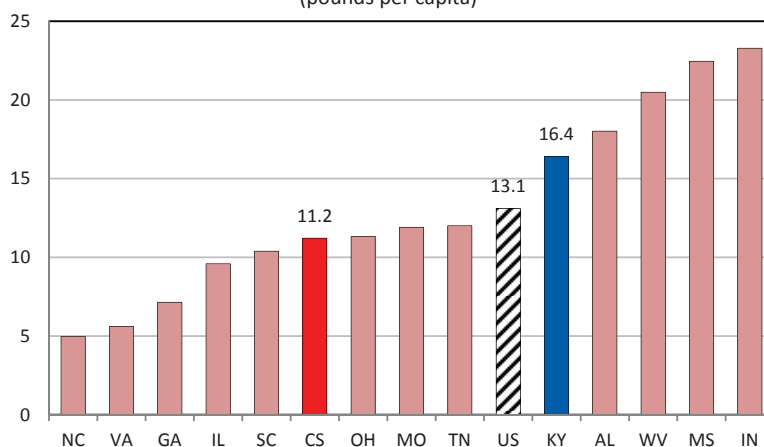


Source: Kentucky Division of Waste Management, Annual Report, Fiscal Year 2014

TOXIC RELEASES

Toxic pollutants can cause cancer or other serious health effects, such as reproductive or birth defects, as well as adverse ecological and environmental consequences. The Environmental Protection Agency provides data to help communities identify chemical disposal facilities and other toxic release patterns that warrant public vigilance. Combined with hazard and exposure information, these data can be valuable in risk identification. Given that toxic releases are often byproducts of the manufacturing process, it is not surprising that Kentucky, which is home to an above-average manufacturing base, reported 16.4 pounds of toxic releases per capita in 2013, an estimate that exceeds the national average (13.1 pounds) and most peer states. Kentucky, however, lags Indiana (23.3), Mississippi (22.5), West Virginia (20.5), and Alabama (18) among the competitor states.

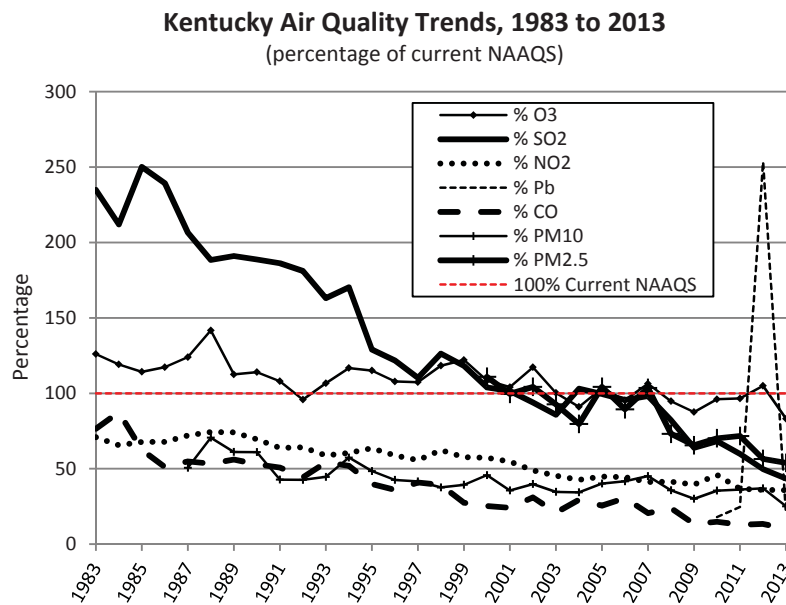
Toxic Chemicals Disposed of or Otherwise Released, 2013
Kentucky, Competitor States, and the U.S.
 (pounds per capita)



Source: U.S. Environmental Protection Agency, TRI Explorer
 Note: CS is the weighted average of the competitor states.

AIR QUALITY

The Kentucky Division for Air Quality reports that “air quality in Kentucky has improved dramatically in the past several decades.” The Division points out that “coal-fired power plants emitted approximately 1.5 million tons of sulfur dioxide (SO₂) in 1976. In comparison, SO₂ emissions from Kentucky coal-fired power plants in 2013 totaled only 188,114 tons.” In the future, as the federal Mercury and Air Toxics Standards are implemented and enforced, the division is projecting “annual emissions of SO₂ from coal-fired power plants to be further reduced to less than 100,000 tons.” Monitoring data show whether the National Ambient Air Quality Standards (NAAQS) as established by the U.S. Environmental Protection Agency are attained. The figure below shows air quality trends from 1983-2013. While individual pollutants oscillate from year to year, overall the trend shows a decline in pollution levels. The pollutants are shown in terms of percentage of the NAAQS because the different pollutants are measured in different scales—which makes direct comparison difficult. The pollutants shown in the figure are Ozone (O₃), Sulfur Dioxide (SO₂), Nitrogen Dioxides (NO₂), Carbon Monoxide (CO), Particulate Matter (PM₁₀), Fine Particulate Matter (PM_{2.5}), and Lead (Pb). Lead levels spiked in 2012 because of a single source that has since been resolved.



Source: Kentucky Energy and Environment Cabinet, Division for Air Quality

OVERVIEW

A DECEMBER 2014 STUDY BY THE BROOKINGS INSTITUTION, entitled *Obesity Costs Evident at the State Level*, estimates that 13.2 percent of Kentucky's Medicaid spending—about \$750 million—is directly attributable to adult obesity. Similarly, a 2010 study conducted at Penn State, *Potential Costs and Benefits of Smoking Cessation for Kentucky*, estimated that “in Kentucky the annual direct costs to the economy attributable to smoking were in excess of \$5.6 billion, including workplace productivity losses of \$1.2 billion, premature death losses of \$2.6 billion, and direct medical expenditures of \$1.7 billion.”

Economists and public health experts can and do debate whether studies like these accurately reflect the true economic costs of poor health, but most of the debate centers on the size of the effect—not on whether it exists. The fact remains that the state's poor health status has quantifiable economic effects and consequences.

Our chronic disease at-risk rates are high (65%), a high percentage of adults smoke (27%), one-third are obese (33%), and we typically don't get enough exercise. In addition, we have the second highest disability rate in the country among working-age adults 18 to 64 years old, 15.7 percent compared to 10.2 percent for the U.S. And generally speaking, Kentucky's health behaviors and health outcomes are worse than both the competitor states as a group as well as the U.S. overall.

And sadly, it's not just the adults—Kentucky children and teens have one of the highest obesity rates in the nation and are more likely to smoke, portending a future we can ill afford. The implications are evidenced by Kentucky's 47th ranking in *America's Health Rankings 2014*, which delineates our high rates of chronic disease, disability, and health care costs. On the other hand, the authors of this study note that among Kentucky's strengths is a low prevalence of binge drinking and high immunization coverage among children.

Kentucky has been viewed as a national exemplar in its execution of the online health exchanges, which were launched as part of the Affordable Care Act, with an increasing number of Kentuckians obtaining health insurance—either from Medicaid or a private insurer. Yet, even with health insurance, if healthy behaviors are not more widely adopted, Kentucky will continue to suffer from the ill-effects of poor health outcomes, which include premature death, lower workforce participation rates, higher public assistance costs, and less-than-optimal worker productivity.

RISK BEHAVIORS AND CHRONIC DISEASE

According to the Centers for Disease Control and Prevention (CDC), more than 75 percent of health care costs are due to chronic conditions such as heart disease, cancer, stroke, diabetes, and arthritis. Many patients have multiple chronic conditions and their care costs up to seven times as much as those with one chronic condition. Much of the chronic disease is caused by four *preventable* health risk behaviors—lack of exercise, poor nutrition, smoking, and heavy alcohol consumption. When compared to the U.S. as well as states that are widely considered to be Kentucky's competitors for economic development prospects, Kentuckians are more likely to smoke, be obese, and not engage in regular physical activity—but are slightly less likely to be heavy drinkers.

**Four Risk Behaviors that Contribute to Chronic Disease,
U.S., Competitor States, and Kentucky, 2013**

Adults, 18 and Older	US (%)	CS (%)	KY (%)
Current Smoker	18*	21*	27
Obese	28*	31*	33
Lack of Physical Activity	27*	29*	30
Heavy Alcohol Consumption	6*	5	5

Source: Authors' analysis of data from Centers for Disease Control and Prevention (CDC), Behavioral Risk Factor Surveillance System Survey Data, Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2013

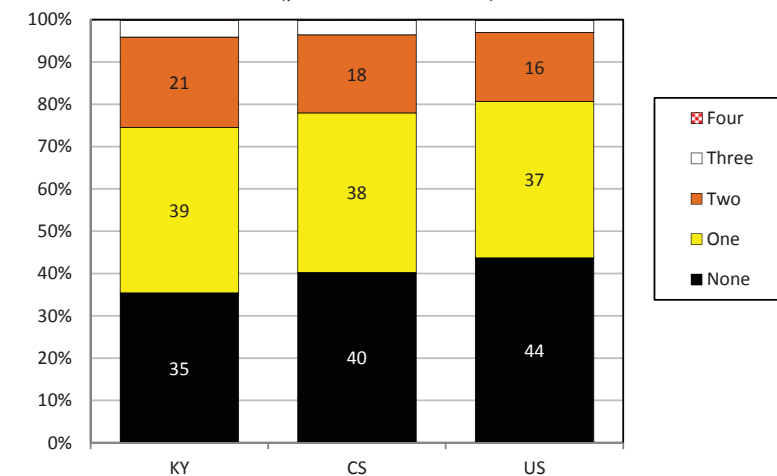
Note: The competitor states are AL, GA, IL, IN, MO, MS, NC, OH, SC, TN, VA, & WV.

**These percentages are statistically different from the Kentucky percentages (alpha=.05).*

NUMBER AT RISK FOR CHRONIC DISEASE

Overall, one-quarter of Kentucky adults exhibit multiple chronic disease causing behaviors. While 35 percent have none of the risk factors of smoking, obesity, inactivity, or heavy drinking, and only 39 percent have one, 21 percent have two, 4 percent have three, and 0.20 percent exhibit all four. Much of chronic disease is caused by these four risk factors and 75 percent of health care costs are due to chronic conditions such as heart disease, cancer, stroke, diabetes, and arthritis. Compared to the competitor states and the U.S., adults in Kentucky are more likely to have at least one chronic disease risk factor.

**Number of Chronic Disease Causing Behaviors, 2013,
Kentucky, Competitor States, and the U.S.**
(percent of total adults)

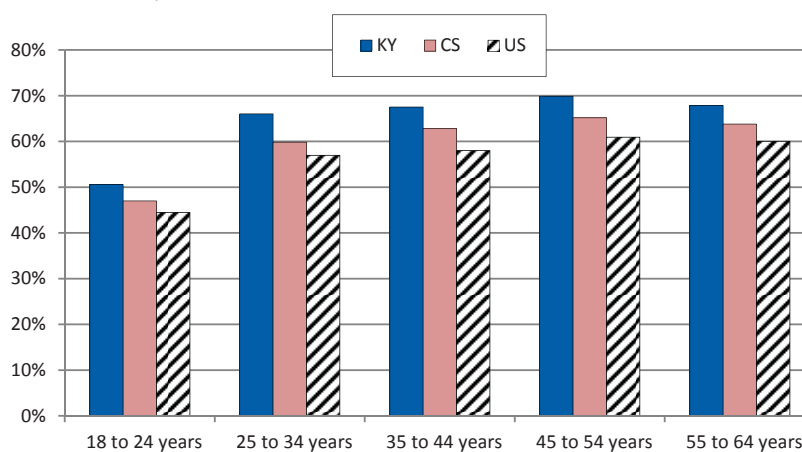


Source: Author's analysis of Behavioral Risk Factor Surveillance System data

CHRONIC DISEASE RISK BY AGE GROUP

An estimated 65 percent of Kentucky adults demonstrate at least one of the four behaviors that put them at risk of developing a chronic disease—smoking, obesity, physical inactivity, or heavy alcohol consumption—compared to 60 percent in the competitive states and 56 percent in the United States. These rates have been consistent and stable for at least the last decade—an indication of how difficult it is to change chronic disease causing activities, not only in Kentucky but across the United States. And in Kentucky, the uninsured—currently about 14 percent of the population—are more likely to be at risk of developing a chronic disease (74%) than the insured (63%). The chronic disease risk does not change much across the age groups for those 25 and older. In Kentucky, nearly 70 percent of adults in the prime working age group—25 to 54 years old—are at risk of developing a chronic disease.

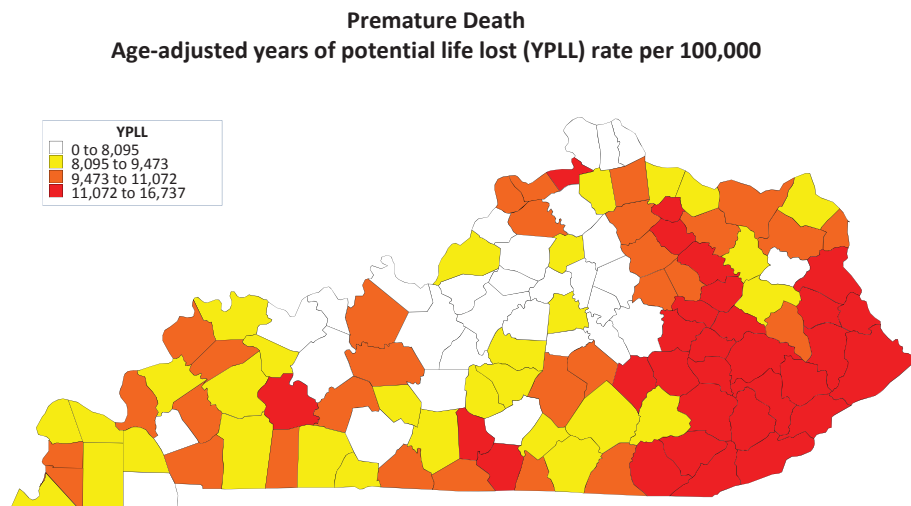
**Chronic Disease Risk by Various Age Groups,
Kentucky, Competitor States, and the U.S.**
(percent of individuals at risk for chronic disease, 2013)



Source: Author's analysis of Behavioral Risk Factor Surveillance System data

PREMATURE DEATH

These county-level estimates of premature death are indicative of the population's overall health status. Premature deaths occur before a person reaches an expected age, which in this case is 75 years old. The belief is that many of these deaths are preventable. The numbers represent the potential years of life lost due to premature death—adjusted to facilitate comparisons across all U.S. counties. The data categories in the map below reflect quartiles, or four groups of about 30 counties each. According to the County Health Rankings report, the years of potential life lost measure (YPLL) “is age-adjusted to the 2000 U.S. population to allow comparison between counties and is reported as a rate per 100,000 people.” The results of these calculations are shown in the map below, with the highest YPLL values in counties of Eastern Kentucky.

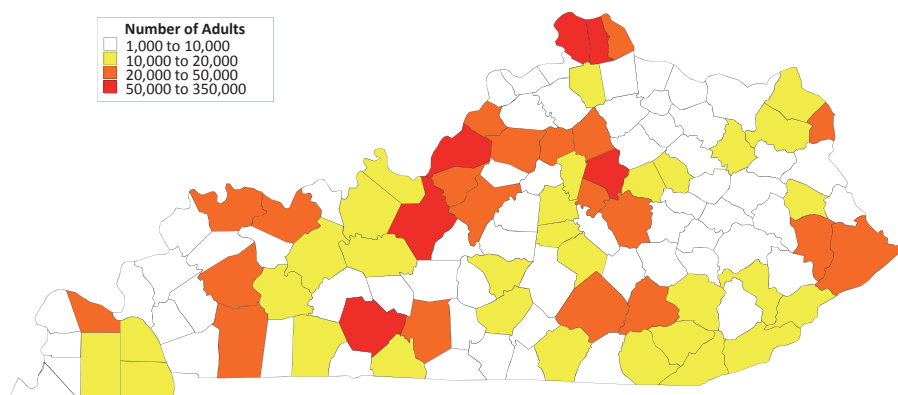


Source: Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, County Health Rankings 2014, www.countyhealthrankings.org

CHRONIC DISEASE BY COUNTY: NUMBER

As we written in previous pages, one-quarter of Kentucky adults exhibit multiple chronic disease causing behaviors. These behaviors or resulting outcomes include smoking, obesity, inactivity, and heavy drinking. We estimate that 39 percent of Kentucky adults exhibit one of these, 21 percent have two, 4 percent have three, and 0.20 percent exhibit all four. The map below and the one on the next page illustrate different facets of this problem. Because most of the state's population live in the urban triangle region, the vast majority of the people at risk for chronic disease are concentrated in this region—even though they represent a comparatively lower percentage of the population in these counties. Jefferson County has the highest number of adults at risk for chronic disease at nearly 350,000. When developing approaches and allocating resources to address chronic disease across Kentucky, it is important to consider the sheer number at risk as well as the percentage.

Kentucky Adults At Risk for Chronic Disease, 2011-2013

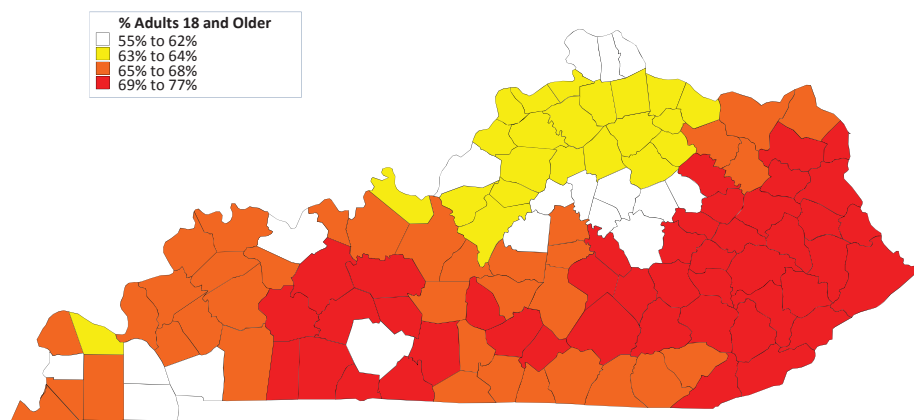


Source: Author's analysis of CDC Behavioral Risk Factor Surveillance System Data, various years

CHRONIC DISEASE BY COUNTY: PERCENTAGE

A very different picture of chronic disease is shown on this map. While the map on the previous page shows that the absolute number of those at risk for chronic disease is relatively small in Eastern Kentucky, it is relatively large when viewed as a percentage of the county population. Likewise, the number at risk in the urban triangle is quite large, but it is comparatively small as a percentage of the population.

Kentucky Adults At Risk for Chronic Disease, 2011-2013

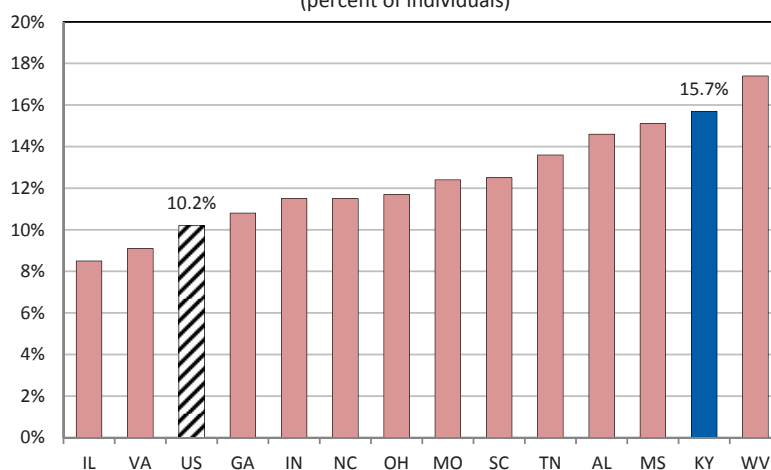


Source: Author's analysis of CDC Behavioral Risk Factor Surveillance System Data, various years

DISABILITY

The Census Bureau asks six questions to determine the types and prevalence of disabilities. They include the following: Hearing Disability—Is this person deaf or does he/she have serious difficulty hearing?; Visual Disability—Is this person blind or does he/she have serious difficulty seeing even when wearing glasses?; Cognitive Disability—Because of a physical, mental, or emotional condition, does this person have serious difficulty concentrating, remembering, or making decisions?; Ambulatory Disability—Does this person have serious difficulty walking or climbing stairs?; Self-Care Disability—Does this person have difficulty dressing or bathing?; and, Independent Living Disability—Because of a physical, mental, or emotional condition, does this person have difficulty doing errands alone such as visiting a doctor's office or shopping? Kentucky has the nation's second highest rate of disability (15.7%) among working-age adults 18 to 64 years old. The U.S. average is 10.2 percent and the competitor states average is 11.5 percent. The prevalence of the six disability types among persons between 18 and 64 in Kentucky is: Visual—2.8 percent; Hearing—3.1 percent; Ambulatory—8.8 percent; Cognitive—6.7 percent; Self-Care—2.9 percent; and Independent Living Disability—5.7 percent.

Disabled Individuals 18 to 64 Years, 2011-2013
Kentucky, Competitor States and the U.S.
 (percent of individuals)



Source: 2011-2013 American Community Survey 3-Year Estimates

YOUTH ALCOHOL AND DRUG ABUSE

A range of behavioral risks can compromise the health and well-being of young people. Here we illustrate trends in two such behaviors. While down sharply in recent years, a disturbing share of Kentucky high school students—23.3 percent of males and 15.4 percent of females—still report episodic heavy drinking (five or more drinks of alcohol in a row within a couple of hours on at least one day during the 30 days before the survey). There is not a statistically significant difference between Kentucky and the U.S. The percentage of Kentucky youth who reported using marijuana one or more times in the past month is lower than the U.S. percentages of 21.9 percent for females and 25 percent for males—but also are not statistically significantly different from the Kentucky rates. Importantly, measures of youth smoking, which we do not illustrate here, suggest Kentucky youth are turning away from the addiction most smokers acquired as teens. Overall, 7.3 percent of the state’s youth, compared with 5.6 percent nationally, reported smoking cigarettes on 20 or more days in the past 30 days in 2013, compared to 28 percent in 1997.

**Percent of Kentucky High School Students*
Who Abused Alcohol** or Used Marijuana in
Past 30 Days, Selected Years**

Year	Alcohol Abuse**		Marijuana Use***	
	Male	Female	Male	Female
1993	41	27	19	11
1997	43	30	34	23
1999	40	34	26	22
2001	40	31	30	22
2003	33	32	22	20
2005	27	23	18	13
2007	29	26	17	15
2009	27	21	20	13
2011	25	21	21	17
2013	23	15	20	15

* Grades 9-12

** Had five or more drinks of alcohol in a row on one or more days

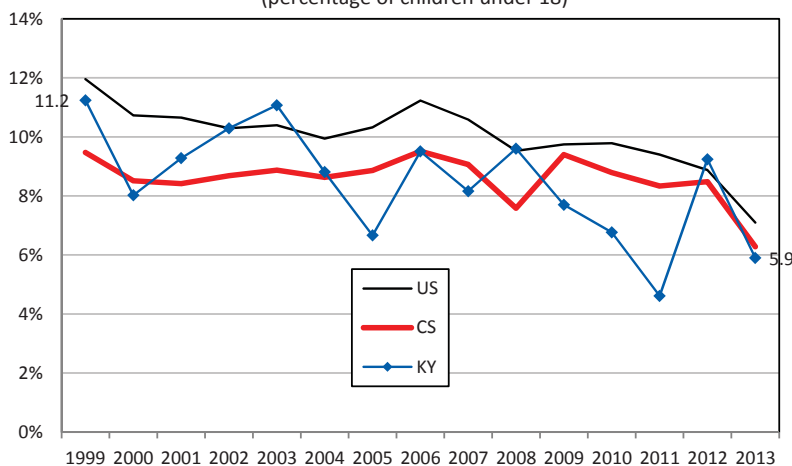
*** Currently used marijuana one or more times

Source: Centers for Disease Control and Prevention

HEALTH INSURANCE COVERAGE: CHILDREN

An estimated 59,500 Kentucky children under 18 years old were not covered by health insurance in 2013, or about 5.9 percent of children. The percentage of uninsured children, which was 11.2 percent in 1999, has been generally declining as children were added to the Kentucky Children's Health Insurance Program (KCHIP) or Medicaid. The Kentucky Children's Health Insurance Program is free or low-cost health insurance for children. KCHIP is for children younger than 19 who do not have health insurance and whose family income is at or less than 213 percent of the federal poverty level. For example, a family of four can earn up to \$50,801 a year and qualify for KCHIP. The percentages we cite are from the U.S. Census Bureau and represent children *under* 18, and therefore do not include those who are 18 years old. The percentage of uninsured children (under 18) in the competitor states and U.S. are 6.3 and 7.1 percent (2013), respectively.

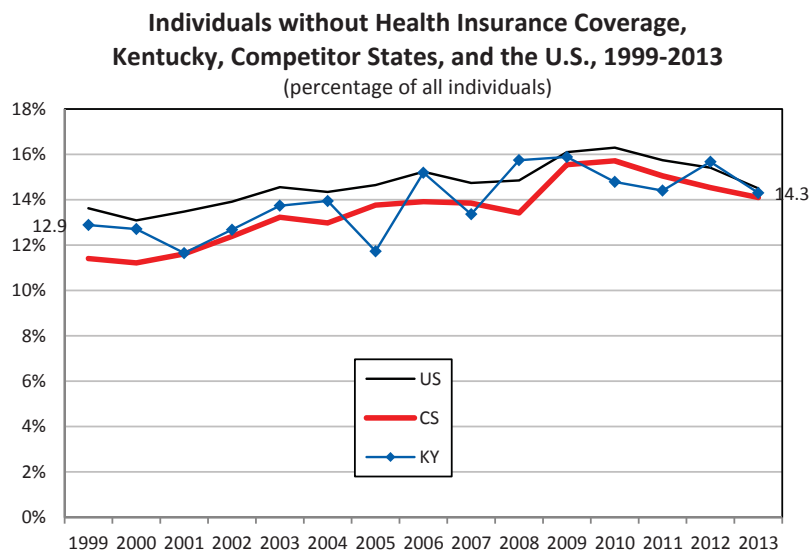
**Children without Health Insurance Coverage,
Kentucky, Competitor States, and the U.S., 1999-2013**
(percentage of children under 18)



Source: U.S. Census, Health Insurance Historical Tables - HIB Series and 2013 American Community Survey

HEALTH INSURANCE COVERAGE: EVERYONE

Though 45 million Americans were without health insurance in 2013, both the number and the percentage of uninsured people declined from the prior year. In Kentucky, 616,500, or 14.3 percent of the total state population, did not have health insurance in 2013. Medicaid has historically played a key role in providing health coverage for disproportionately poor Kentuckians, insuring an estimated 18.3 percent of the population here in 2013, compared to about 17.2 percent in the competitor states and 17.9 in the U.S. The implementation of the Affordable Care Act has increased the number of individuals on Medicaid over the past few years.



Source: U.S. Census, Health Insurance Historical Tables - HIB Series and 2013 American Community Survey

ORAL HEALTH

Nationally, Kentucky had the fifth highest estimated percentage of edentate persons, those who have lost all their natural teeth due to tooth decay or gum disease, among working-age adults (age 18 to 64) in 2012, and the sixth highest percentage of older adults (age 65 and older). Also, Kentucky had the fifth highest percentage of edentate adults aged 18 and older. Kentucky ranks seventh for adults who have lost at least one permanent tooth due to tooth decay or gum disease and sixth for adults who have lost 6 or more teeth. Across the board Kentucky's oral health indicators are worse than the U.S. and competitive state averages, including the percentage of Kentucky adults who have visited a dentist or dental clinic within the past 12 months.

Oral Health Indicators, U.S., Competitor States, and Kentucky, 2012

(percent of individuals)

Adults, 18 and Older	US (%)	CS (%)	KY (%)
Missing at least one permanent tooth	45*	48*	52
Missing 6 or more teeth	16*	19*	23
Missing all teeth	5*	7*	9
Visited dentist in last 12 months	65*	64*	60
Working Age, 18 to 64			
Missing at least one permanent tooth	39*	42*	45
Missing 6 or more teeth	10*	13*	16
Missing all teeth	3*	4*	5
Visited dentist in last 12 months	65*	65*	62

Source: Author's analysis of data from Centers for Disease Control and Prevention (CDC), Behavioral Risk Factor Surveillance System Survey Data, Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2012

Note: The competitor states are AL, GA, IL, IN, MO, MS, NC, OH, SC, TN, VA, & WV.

*These percentages are statistically different from the Kentucky percentages (alpha=.05).

OVERVIEW

SURVEYS OF CEOs AND CONSULTANTS WHO ARE INVOLVED in industrial site selection decisions show that infrastructure considerations play an important role in their decision-making. Kentucky received a “C” on the *2013 Report Card for America’s Infrastructure*, which is produced every four years by the American Society of Civil Engineers (ASCE); the U.S. got a “D+.” The engineers evaluate 16 separate categories (e.g., from aviation to waste water) according to capacity, condition, funding, future need, operation and maintenance, public safety and resilience.

They highlight that Kentucky has 277 high hazard dams but only 5 percent have an Emergency Action Plan, that \$5 billion is needed to maintain and upgrade the drinking water systems and \$2.1 billion is needed for wastewater systems, that Kentucky has 1,244 structurally deficient bridges, and 34 percent of our major roads are poor or mediocre in quality. And a separate assessment of Kentucky’s public school facilities conducted in 2011 by the joint team of Parsons Commercial Technology Group and MGT of America, found \$3.7 billion in “current deficiencies that include condition needs, deferred maintenance needs, educational suitability needs and technology readiness needs.”

We include data in this section on how Kentucky’s land is used (e.g., urbanized), the state of community water systems, the nature of solid waste disposal, road conditions and characteristics, bridge conditions, and the capacity of the newest member of the infrastructure family—high-speed Internet or broadband.

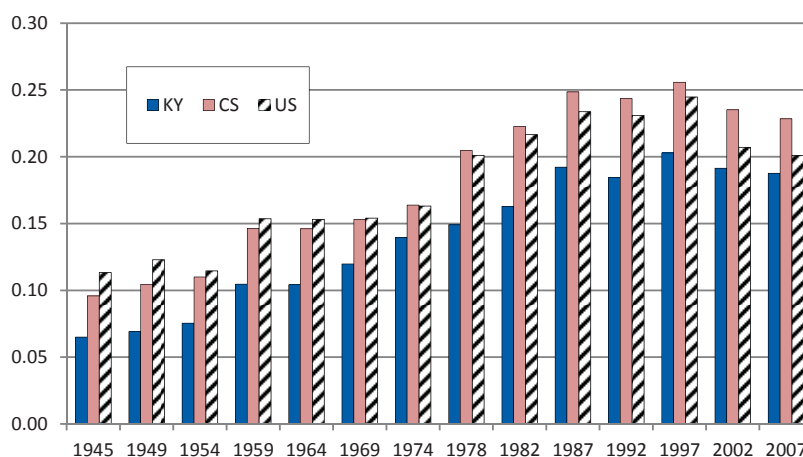
Maintaining—let alone expanding—Kentucky’s existing infrastructure, whether school buildings or roads, requires a tremendous amount of money. And in today’s budgetary environment, finding the necessary funds is challenging. While the ASCE gave Kentucky a higher grade than the U.S., a “C” as opposed to a “D+,” generating the resources to maintain and expand the state’s basic infrastructure will not only continue to be a challenge, it will also be an important factor in keeping the state economically competitive for all forms of industry.

Public-Private Partnerships, or P3s, are increasingly viewed as an attractive way to finance and construct large infrastructure projects. According to the Council of State Governments, P3s “are contractual arrangements between the public sector and a private entity in which the private entity is responsible and financially liable for performing functions in connection with a public infrastructure project.” Currently 26 states have laws allowing these arrangements, but Kentucky is not one of them.

URBANIZATION

Kentucky is viewed by many as a “rural” state. And, given that nearly 42 percent of the population lives in an area defined by the U.S. Census Bureau as “rural” (2010 Census), this perception of Kentucky is not without merit. By comparison, approximately 28 and 19 percent of the population in the competitor states and the U.S., respectively, live in rural areas. However, the difference between Kentucky and the competitor states, and the U.S., is not as stark when comparing urban acres per capita. Kentucky still lags the competitor states and the U.S. on this measure of urbanization, but the gap smaller. In 2007, the most recent year for which data are available, Kentucky had 0.19 urban acres per capita, compared to 0.23 in the competitor states and 0.20 in the U.S. The manner in which communities develop and grow can, and does, have important public finance implications—particularly with regard to infrastructure needs. The next update for these data is scheduled for release in January 2016.

**Urban Acres Per Capita, Selected Years,
Kentucky, Competitor States, and the U.S.**



Source: U.S. Department of Agriculture, Economic Research Service

BROADBAND

Research shows that because the Internet permeates so many aspects of our lives, access to and use of it appear to be increasingly important for anyone becoming politically informed, socially integrated, and economically successful in the Information Age. Studies suggest that “Internet use increases employment and income, enhances consumer welfare, and promotes civic engagement,” (NTIA, 2013), and that enhancing the nation’s broadband infrastructure can improve innovation, entrepreneurship, and productivity (Brookings, 2013). The importance of high-speed Internet access promises to become even more important in the future as online education becomes more firmly rooted. The percentage of Kentucky households with access to a basic level of broadband—defined as download (DL) speed>3.0 mbps and upload speed>0.768 mbps—is about 96.5 percent. Unfortunately a basic level of broadband speed is no longer sufficient for many important applications. Distance learning, for example, requires a minimum 25 mbps DL for an “ok” experience and 50 mbps for a “good” experience. While about 85 percent of U.S. households have access to at least 25 mbps DL, only about 62 percent of Kentucky households have access to this speed.

**Broadband Access and Speed Indicators,
U.S., Competitor States, and Kentucky, 2013**
(percent of households)

Area	Broadband Access	DL>3.0 Mbps, UL>0.768 Mbps	DL>10 Mbps	DL>25 Mbps	DL>50 Mbps
US	99.4	99.1	98.3	84.9	82.0
AL	99.4	98.9	97.6	71.2	64.9
GA	99.7	99.3	98.9	85.9	84.2
IL	100.0	99.8	99.5	94.5	92.7
IN	99.9	99.5	99.1	87.1	83.2
KY	97.6	96.5	92.4	62.3	59.6
MS	99.7	99.6	97.4	67.5	62.2
MO	99.4	98.6	96.5	73.8	67.0
NC	98.8	98.6	98.4	97.9	97.9
OH	99.7	99.5	99.1	86.7	83.9
SC	99.7	99.4	99.2	82.0	80.7
TN	99.3	98.7	97.9	82.5	81.8
VA	99.1	98.4	97.6	79.2	76.6
WV	95.4	93.4	91.7	56.7	56.7

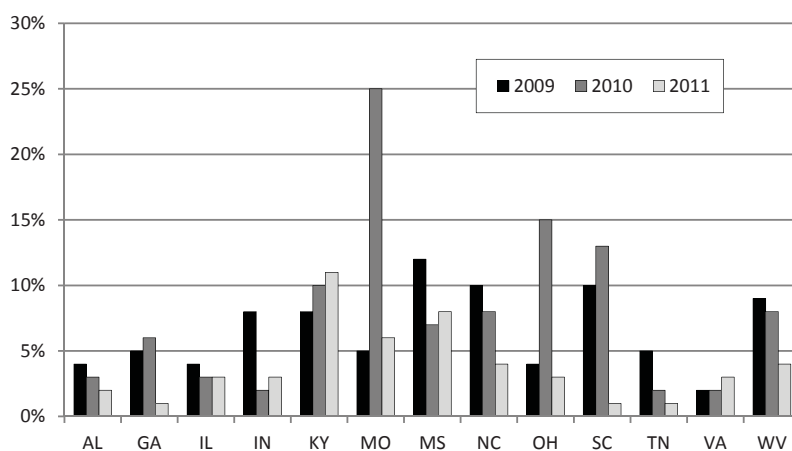
Source: National Telecommunications and Information Administration (NTIA) National Broadband Map (NBM), <http://www.broadbandmap.gov/>, current as of December 31, 2013.

Note: Broadband Access is from either wireline or wireless.

WATER QUALITY

The United States enjoys one of the safest and most reliable supplies of drinking water in the world. The Safe Drinking Water Act of 1974 sought to preserve the nation's water supply while maintaining high standards for quality. Most Americans get their water from a community water system (CWS), 51,356 of which served approximately 299 million people nationally in 2011, according to the Environmental Protection Agency. However, just 8 percent of those systems (4,221) served 82 percent of the population. In Kentucky and beyond its border, about 462 public drinking water systems serve an estimated 4.5 million people. Of these CWSs, approximately 12 percent or 55 systems reported health-based violations in 2011. Nationally in 2011 about 3 percent of the systems supplying water to 6 percent of the population reported health-based violations. Importantly, the percent of Kentuckians served by systems without a health-based violation has grown from approximately 63 percent in the early 1990s to 89 percent in 2011. Since 1998, data show that nearly all Kentuckians can receive water from a system that has not reported a potential health violation.

Community Water Systems (CWS) with Reported Health-Based Violations, Kentucky and Competitor States
(percent of the state population served by a CWS with a violation)

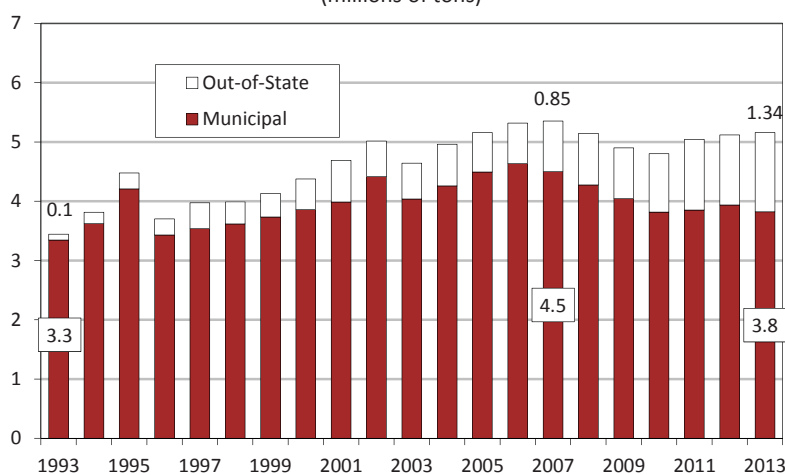


Source: U.S. Environmental Protection Agency, *Drinking Water and Ground Water Statistics*, various years

SOLID WASTE DISPOSAL

In 1992 the Kentucky General Assembly set the ambitious goal of reducing the amount of municipal solid waste (MSW) deposited in Kentucky landfills in each subsequent year—but waste continues to mount. While the total amount of solid waste deposited in Kentucky landfills has been trending down since its peak of 5.35 million tons in 2007, the amount deposited since then has been trending upward and in 2013 was 52 percent higher than in 1993. The majority of that total was MSW, which has increased 16 percent. A growing portion of the total, however, is solid waste from out-of-state sources, which reached a record high of 1.34 million tons in 2013, a significant increase since the early to mid-1990s. As a result of this growing trend, out-of-state solid waste constitutes about 26 percent of the total amount of waste deposited in Kentucky’s landfills—compared to less than 5 percent in the early to mid-1990s.

**Solid Waste Disposed in Kentucky Landfills,
1993-2013**
(millions of tons)

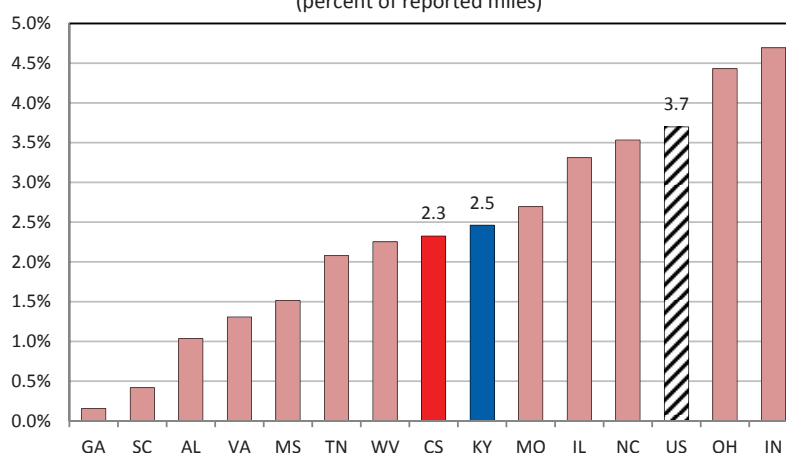


Source: KY Division of Waste Management

ROAD CONDITION

Ideas, innovation, and intellectual capital form the foundation of the evolving knowledge economy, but Kentucky, like most states, is still centered on making and growing things, extracting and transporting raw materials, and moving people and products to markets and workplaces. Thus, the traditional transportation infrastructure—the road system—is still an essential piece of the economic development puzzle. Around 28 percent of Kentucky’s economy is in goods-producing industries that are highly dependent on transportation, compared to about 20.4 percent nationally. And even as the nation’s economy evolves over the next few decades, the movement of freight along the country’s highways, a quintessential “old economy” activity, will continue to grow. An extensive and efficient transportation system, both now and in the future, can facilitate lower industry production costs and consumer prices, widen access to commodities for businesses and consumers, and broaden the pool of workers for business while creating more job opportunities. Whether a road is in poor condition depends on pavement roughness, with only a small percentage (2.5%) of Kentucky’s roads in poor condition.

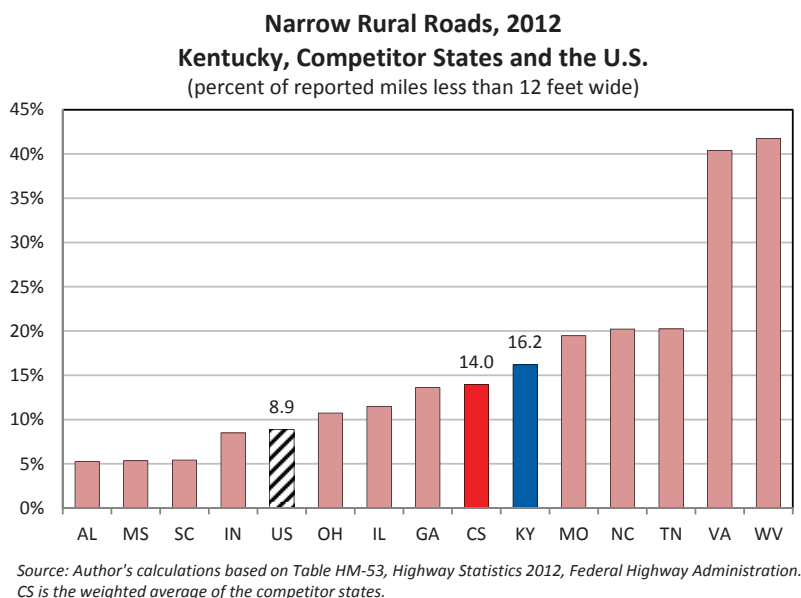
Roads in Poor Condition, 2012
Kentucky, Competitor States and the U.S.
 (percent of reported miles)



Source: Author's calculations based on Table HM-64, Highway Statistics 2012, Federal Highway Administration. CS is the weighted average of the competitor states.

NARROW ROADS

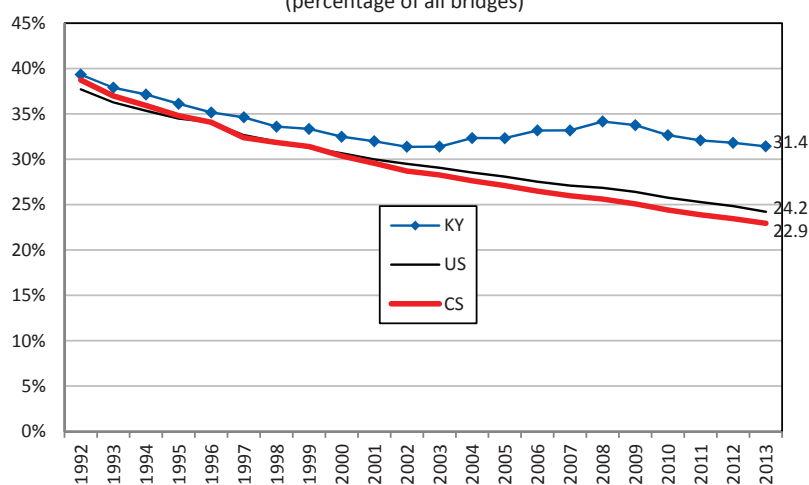
This is a measure of lane width for “other principal arterial” roads, not interstates, other freeways, or expressways. A narrow lane is one that is less than 12 feet wide. Obviously, the more narrow the lane, the more difficult it is to move products and material with large trucks. Consequently, economic development decisions can be affected by the state and condition of the transportation infrastructure. An estimated 16 percent of Kentucky’s other principal arterial roads are narrow, compared to about one-tenth (9%) nationally.



BRIDGES

There are just over 14,000 bridges in Kentucky, and nearly one-third of them (31.4%) are considered either structurally deficient or functionally obsolete—a higher percentage than the competitor states (22.9%) and the U.S. (24.2%). Of Kentucky's 4,436 problem bridges, 1,234 are structurally deficient and 3,202 are functionally obsolete. Among all states in 2013, Kentucky had the twelfth highest percentage of deficient bridges.

Bridges that are Structurally Deficient or Functionally Obsolete, Kentucky, Competitor States, and the U.S.
(percentage of all bridges)

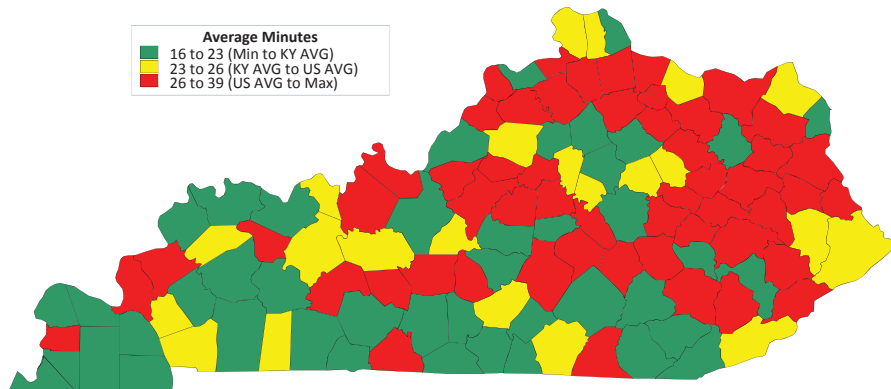


Source: U.S. Department of Transportation, Federal Highway Administration

COMMUTING

An estimated 76 percent of Americans 16 years and older drive to work alone, which is near an all-time high. By comparison, carpooling is around 10 percent and public transportation accounts for about 5 percent. The rest use some other form of transportation, like biking, or work from home. Reflecting both economic centers of gravity as well as the state of the infrastructure network, the map below illustrates Kentucky's county-level average travel times to work. An estimated 82.5 percent of Kentuckians drive to work alone. Kentucky's statewide average of 22.8 minutes is less than the U.S. average of 25.5 minutes (based on 5-year pooled 2009-2013 data). The counties in the map are divided into one of three categories: below the Kentucky average; above the Kentucky average but below the U.S. average; and above the U.S. average. Most of the counties above the U.S. average are in Eastern Kentucky or situated around Hardin County in the central part of the state. McCracken County in western Kentucky has the lowest average travel time at 17 minutes while Pendleton County, located south of Cincinnati, is the highest at 38.8 minutes.

**Mean Travel Time to Work (minutes), Workers Age 16+,
2009-2013**



Source: American Community Survey, 2009-2013

OVERVIEW

FEDERAL FINANCIAL SUPPORT FOR BASIC RESEARCH IS NOT keeping pace with the economy and America's universities can do more to maximize existing investments for their commercial potential. Why should anyone care about funding for research and development? The answer is simple: over the long term our collective standard of living will likely depend on it. According to a recent paper by John Fernald at the Federal Reserve Bank of San Francisco and Charles Jones at Stanford, around three-fourths of U.S. economic growth since 1950 was fueled by just two factors—rising educational attainment and research intensity—with the later accounting for nearly 60 percent of the growth.

Despite the tight connections between research intensity, economic growth and job creation, federal funding for basic research as a percentage of the nation's gross domestic product is at its lowest point in over a dozen years. The ideas, technologies, and products spawned by research and development investments do more than just increase economic output—they help improve our quality of life. A list of innovations owing their existence to basic research include nearly every fundamental science-driven technology and innovation woven into the basic fabric of our lives—from touch screens to smart phones to the Internet, from systems used for energy exploration to the basic architecture of social media, from GPS to cancer treatments. Moreover, a number of emerging transformative technologies—from cloud computing to genomics to renewable energy—are partially dependent on federal funding for basic research and hold the potential to enhance economic opportunities, improve health outcomes, and sustain development for future generations.

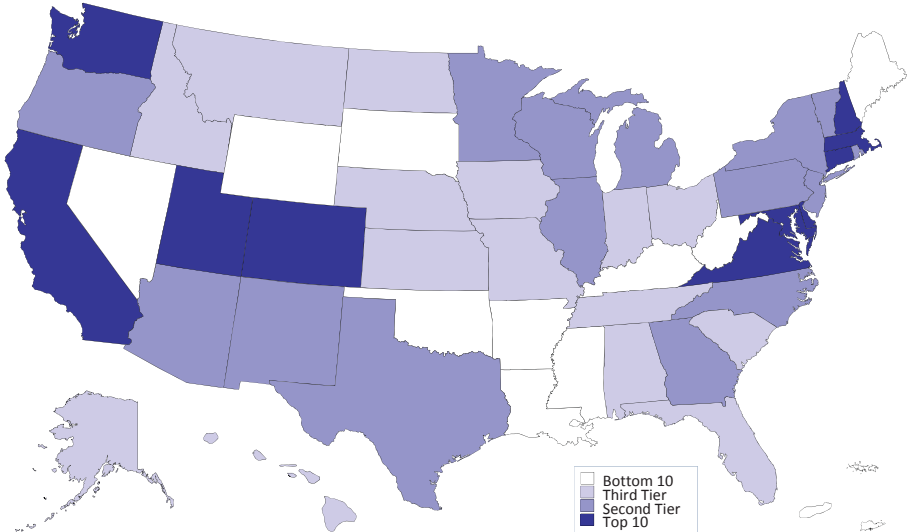
As federal research and development funds become more limited, the nation's universities can and should do more to realize their tremendous innovation and commercialization potential. Moreover, as government budgets tighten, policy makers, as well as taxpayers, increasingly expect a positive return on investment from scarce public resources.

Kentucky needs good ideas, adequate finances, and energetic human capital to create and nurture high-growth enterprises. Efforts by the Von Allmen Center for Entrepreneurship within the Gatton College of Business and Economics, and the Innovation Network for Entrepreneurial Thinking (iNET), which is hosted in the College of Communication and Information, are designed to stimulate entrepreneurship, foster commercialization, and improve the state's innovation capacity—essential elements for our collective future.

STATE TECHNOLOGY & SCIENCE INDEX

Combining several indicators that reflect a state's research and development inputs, risk capital and entrepreneurial infrastructure, human capital investments, technology and science workforce, and technology concentration and dynamism, the Milken Institute has ranked the states according to their science and technology prowess in a 2014 report, *State Technology and Science Index: Enduring Lessons for the Intangible Economy*. Kentucky is ranked 44th, which is a few spots higher than its previous ranking of 47th in 2010 and one rung higher than its 45th ranking in 2012. The top state is Massachusetts, followed by Maryland, California, Colorado, Utah, Washington, Virginia, New Hampshire, Connecticut, and Delaware.

State Technology and Science Index 2014

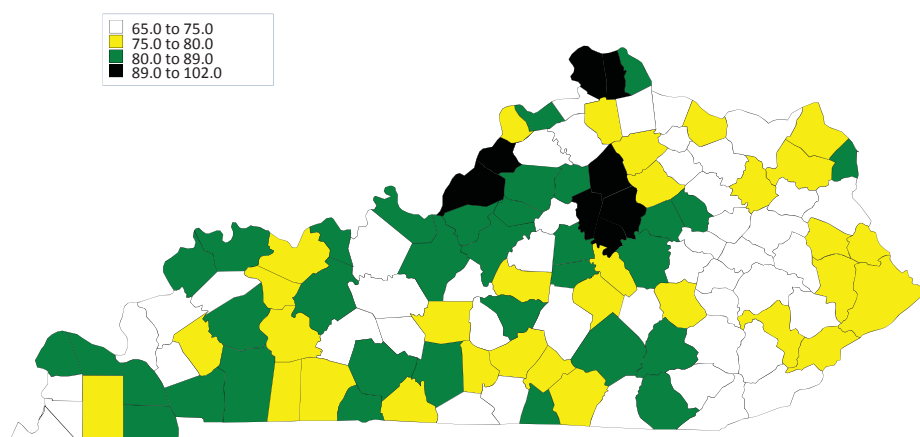


Source: Milken Institute 2014 State Technology and Science Index

COUNTY-LEVEL INNOVATION INDEX

An initiative by the U.S. Department of Commerce Economic Development Administration, Purdue University, and Indiana University has produced an “innovation index” for every county in the United States. Kentucky’s county-level results are illustrated on the map below, with the highest innovation index values anchoring the three angles of the urban triangle—the Louisville area, Northern Kentucky, and Fayette County. The index is based on four broad categories and includes 22 different variables. The four broad categories include Human Capital, Economic Dynamics, Productivity and Employment, and Economic Well-Being. Some of the variables include educational attainment, high-technology employment, broadband adoption, venture capital investments, patent creation, worker productivity, proprietor income, the poverty rate, and per capita income. The highest ranked Kentucky county is Fayette at 101.8. Santa Clara County, California—which is Silicon Valley—and Broomfield County, Colorado—which is the Denver area—have the highest values in the United States at 125.4 each; Hancock County, Tennessee, which is located along the Kentucky-Tennessee border in the eastern region has the lowest index value in the country at 61.7. The index is scaled so that 100 is the U.S. average.

Innovation Index by County

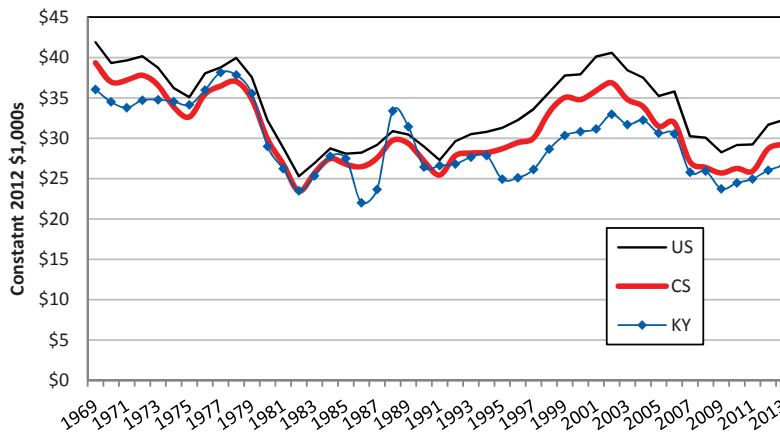


Source: www.statsamerica.org, funded in part by the U.S. Commerce Department's Economic Development Administration. Work was conducted by the Purdue Center for Regional Development, the Indiana Business Research Center at Indiana University's Kelley School of Business, and other research partners.

ENTREPRENEURIAL DEPTH

Entrepreneurship is a particularly promising vehicle for economic development, as reflected in the January 2012 update of the Kentucky Cabinet for Economic Development *Strategic Economic Development Plan*. Entrepreneurs help create new jobs, and generate wealth and new growth. They are innovative users of assets and resources and appear to be a critical mechanism for bringing new ideas and innovations to the marketplace. The depth of entrepreneurship can be gauged by examining the value created by entrepreneurs in a region as measured by the ratio of self-employment income to the number of self-employed workers in an economy. Unlike breadth which measures the number of entrepreneurs in a region, depth examines the value. High-value entrepreneurs clearly earn more, add more value, and enhance regional growth and prosperity more than other entrepreneurs. Kentucky has generally lagged the United States and competitor states in entrepreneurial depth. Since the early 1990s Kentucky's average self-employment income has been below the U.S. and competitor states; in 2013 Kentucky lagged the U.S. and competitor states by approximately \$5,700 and \$2,700 respectively.

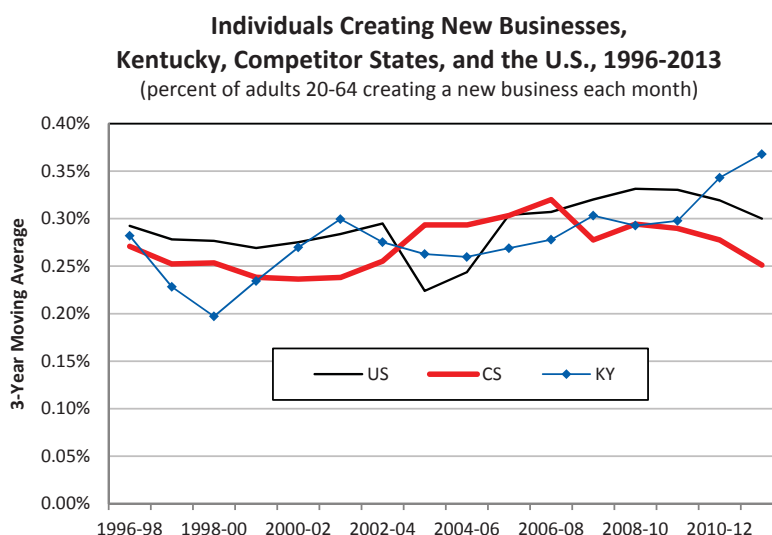
**Average Self-Employment Income,
Kentucky, Competitor States, and the U.S., 1969-2013**
(nonfarm proprietor income/nonfarm proprietor employment)



Source: U.S. Department of Commerce, Bureau of Economic Analysis

ENTREPRENEURIAL BREADTH

Entrepreneurship is integral to the American Dream. Imagination, intelligence, and tenacity can transform a good idea into a thriving business or a global enterprise. The Kauffman Foundation produces an annual Index of Entrepreneurial Activity which is based on monthly data from the Current Population Survey (CPS). According to Kauffman, “capturing new business owners in their first month of significant business activity, this measure provides the earliest documentation of new business development across the country.” In 2013, an average of 0.28 percent of the American adults (20 to 64 years old), or 280 out of 100,000 adults, created a new business each month. While Kauffman presents data for individual years, we use 3-year moving averages because of the volatility of state-level percentages—as evidenced by the Kentucky data in the figure. The 2011-2013 average for the U.S., Kentucky, and competitor states are 0.30%, 0.37%, and 0.30%, respectively. As illustrated below, the overall trend is slightly upward for Kentucky.

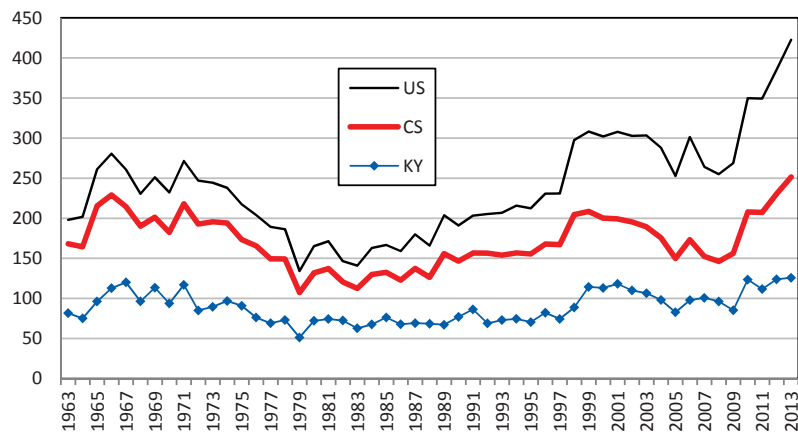


Source: Author's analysis of CPS data provided by Robert W. Fairlie, Kauffman Index of Entrepreneurial Activity

PATENTS

Innovation, as measured by the number of patents issued, is widely regarded as a measure of a state's entrepreneurial energy. Research finds that innovation, along with education, has a significant impact on a state's per capita income. A study by the Federal Reserve Bank of Cleveland shows that states which spawn innovation, as measured by patents, can reap economic rewards that endure for generations. The authors conclude, "A state's knowledge stocks (as measured by patents and education levels) are the main factors explaining a state's relative per capita income." In other words, Kentucky's much lower-than-average patent stock—which has trailed the U.S. as well as the competitor states for the last 50 years—along with lagging educational attainment rates, are why the state's per capita income has been languishing at just over 80 percent of the U.S. average for the last several decades.

**Number of Patents,
Kentucky, Competitor States, and the U.S., 1963-2013**
(per 1 million population)

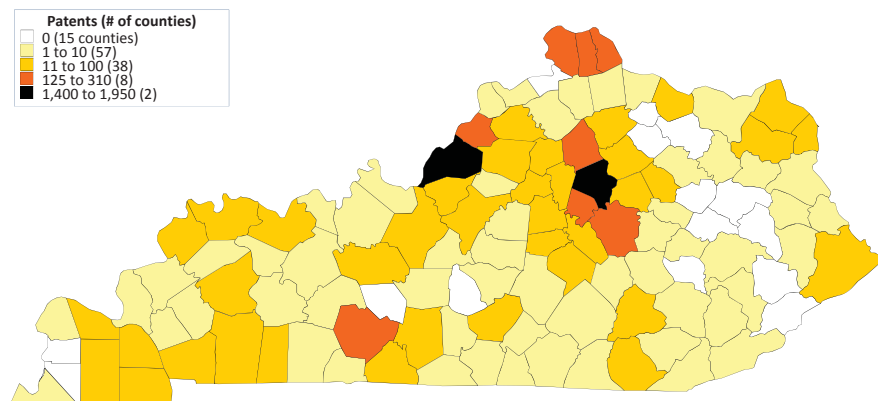


Source: US Patent and Trademark Office and U.S. Census Bureau

PATENTS BY COUNTY

From 2000 to 2013 Kentucky businesses and individuals acquired 6,328 utility patents, which are patents for invention. Of this total, 3,354 or 53 percent were from two counties: Fayette and Jefferson. The next eight counties account for 1,523 or 24 percent. The county-level map illustrates the concentrated nature of patent generation in Kentucky.

Utility Patents by County, 2000-2013

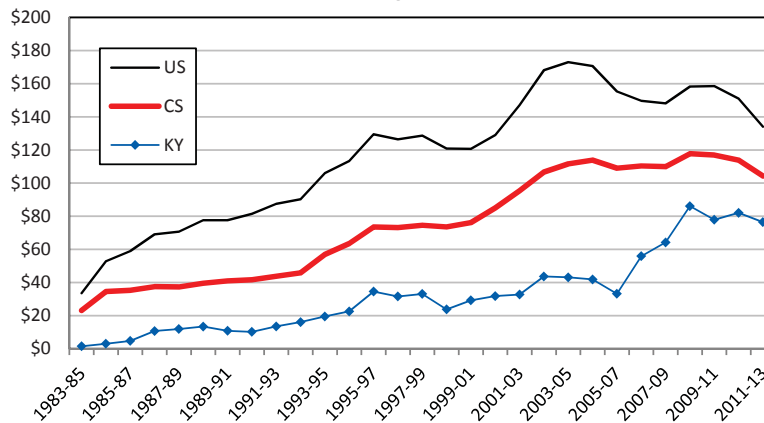


Source: U.S. Patent and Trademark Office, U.S. State Patenting, Breakout by Regional Component, Count of 2000-2013 Utility Patent Grants

SMALL BUSINESS INNOVATION RESEARCH

Small Business Innovation Research (SBIR) and Technology Transfer (STTR) funding is available to companies with 500 or fewer employees; it is designed to stimulate high-technology innovation and facilitate the commercialization of scientific and technological discoveries. According to the National Science Foundation, “a high value indicates that small business firms in a state are doing cutting-edge development work that attracts federal support.” When compared to competitor states and the U.S. average, Kentucky consistently lags behind—evidenced by the \$76 per \$1 million in state gross domestic product during 2011-13. By comparison, the U.S. average was \$134 and the competitor states was \$104.

**Small Business Innovation Research (SBIR)
& Technology Transfer (STTR) Funding, 1983-2013,
Kentucky, Competitor States, and the U.S.**
(SBIR/STTR funding \$/\$1 million GDP)

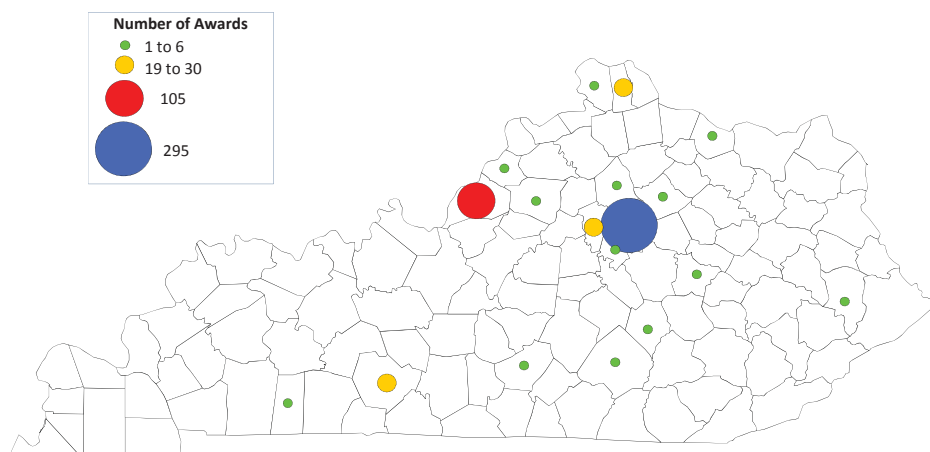


Source: Author's analysis of SBIR/STTR data

SBIR/STTR AWARDS BY COUNTY

Of all the dollars invested through the SBIR and STTR programs from 1983 to 2014, the majority went to ventures in two counties. There were approximately 515 awards during this time and 295 were in Fayette County, which represents 47 percent of the total funding. Jefferson County was the second highest recipient with 105 awards and around 31 percent of the total funding. Kenton, Woodford, and Warren Counties received 78 awards and 15.6 percent of the total funds. These five counties account for virtually all of Kentucky's SBIR/STTR awards during this period, which is indicative of the geographic concentration of Kentucky's innovation ecosystem.

Kentucky SBIR/STTR Awards, by County, 1983-2014

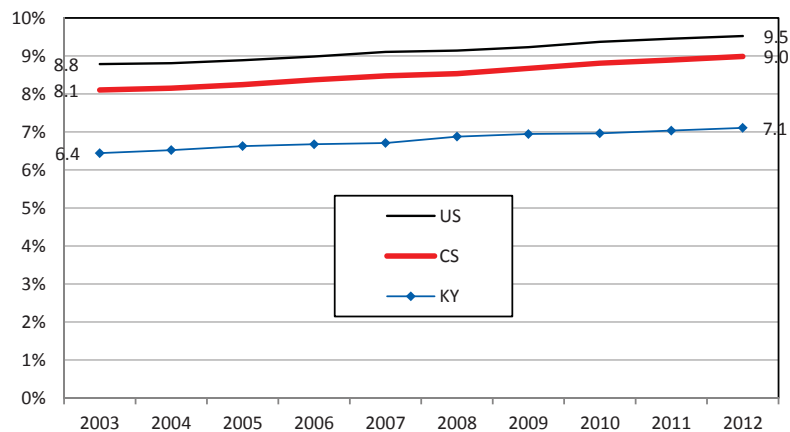


Source: Authors' analysis of data from www.sbir.gov

HIGH-TECHNOLOGY ESTABLISHMENTS

According to the National Science Foundation (NSF), high-technology industries have at least twice the number of scientific, engineering, and technical occupations compared to the average for all industries. These workers have extensive education and training in the sciences, mathematics, and engineering. We use 50 different industries (at the 4-digit NAICS level) to identify high-technology establishments. Using the 46 sectors identified by NSF and four additional identified by the Milken Institute, we calculate the number of high-technology establishments as a percentage of total establishments. Dating back to 2003 Kentucky has consistently trailed the competitor states and the U.S. In 2012, 7.1 percent of Kentucky establishments could be considered “high-tech,” while the competitor states could boast 9 percent and the U.S. 9.5 percent.

**High-Technology Establishments,
Kentucky, Competitor States, and the U.S., 2003-2012**
(as a percent of total establishments)

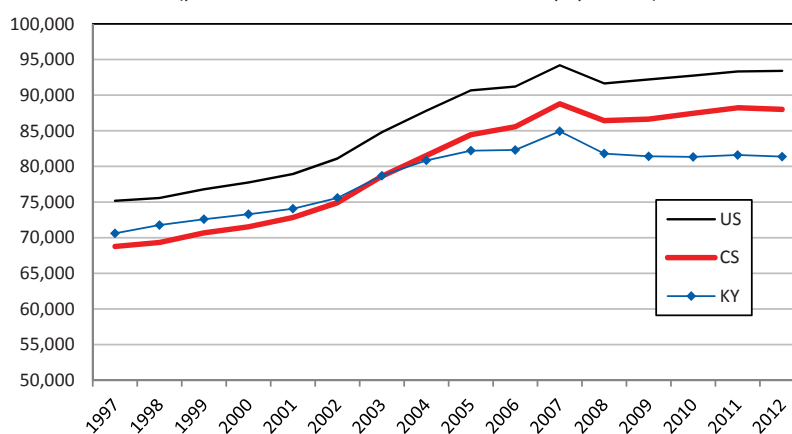


Source: Author's analysis of County Business Patterns, U.S. Census Bureau, various years

NONEMPLOYER ESTABLISHMENTS

This is a measure of self-employment. According to the Census Bureau, “A nonemployer business is one that has no paid employees, has annual business receipts of \$1,000 or more (\$1 or more in the Construction industry), and is subject to federal income taxes.” Some examples of these businesses are beauty salons, child-care providers, landscaping services, barber shops, real estate agents, tax preparers, and electricians—just to name a few. These types of small enterprises have been growing steadily since the late 1990s, but the growth stalled somewhat during the Great Recession. Kentucky’s rate has been lower than the competitor states and the U.S., and since the Great Recession has been essentially flat.

**Nonemployer Establishments,
Kentucky, Competitor States, and the U.S., 1997-2012**
(per 1 million noninstitutionalized civilian population)

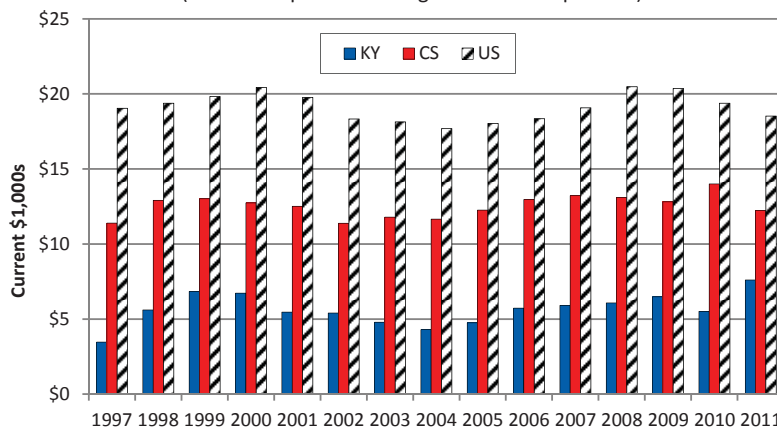


Source: Author's analysis of data from the U.S. Census Bureau

INDUSTRIAL RESEARCH & DEVELOPMENT

A January 2012 report by Regional Technology Strategies, Inc., *Innovation Capacity: Calibrating Kentucky*, which was prepared for the Kentucky Science and Technology Corporation, states that “while a raft of diverse indicators and metrics are often employed to build a profile of a state’s innovation support capacity, the single most important measure is generally held to be industry R&D.” The report notes that in 2008 Kentucky was ranked 40th among the states on this measure when expressed as a percentage of total worker earnings. Nationally, funds spent by industry constituted over half of all funding for research and development. It is believed that these funds are directly related to productivity gains and innovation capacity. In Kentucky, industry spent \$7,600 per million dollars in state gross domestic product in 2011 on research and development, a substantial increase from \$5,500 in 2010. The competitor state average in 2011 was \$12,200 and the U.S. average was \$18,500. In terms of the highest amount expended in absolute dollars among the competitor states, Illinois registered \$12 billion—compared to Kentucky’s \$1.3 billion.

**Funds for Industrial R&D Performance,
Kentucky, Competitor States, and the U.S., 1997-2011**
(thousands per million in gross domestic product)

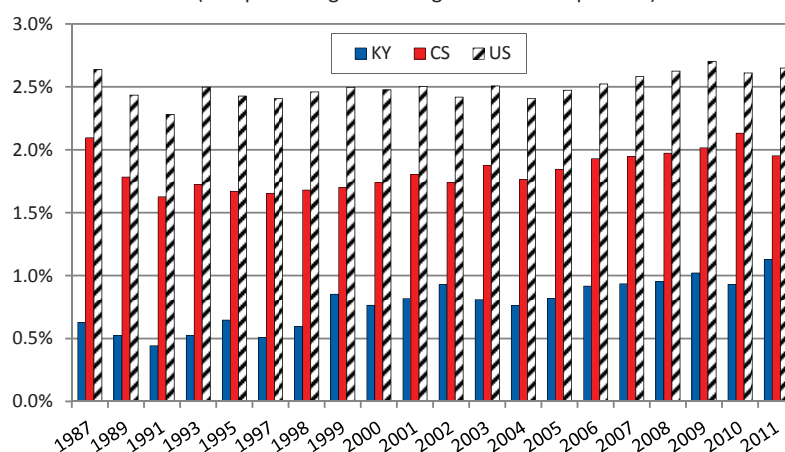


Source: National Science Foundation, *Business and Industrial R&D*, various years
Note: Missouri data are not available for 2011.

TOTAL RESEARCH & DEVELOPMENT

While industrial research and development performance accounts for close to 70 percent of the national total, colleges and universities, nonprofits, federal and state government agencies account for the rest. According to the National Science Foundation (NSF), “a high value indicates that a state has a high intensity of R&D activity, which may support future growth in knowledge-based industries.” NSF also points out that “states with high rankings on this indicator also tended to rank high on S&E (science and engineering) doctorate holders as a share of the workforce.” When expressed as a percentage of state gross domestic product, the competitor state average in 2011 was just below 2 percent, compared to Kentucky’s value of just over 1 percent (1.1%); the U.S. average was about 2.7 percent. New Mexico had the highest value of all the states—8.1 percent. Kentucky finds itself in the bottom quartile of states on this measure.

**Total Research and Development Expenditures,
Kentucky, Competitor States, & the U.S., Selected Years**
(as a percentage of state gross domestic product)

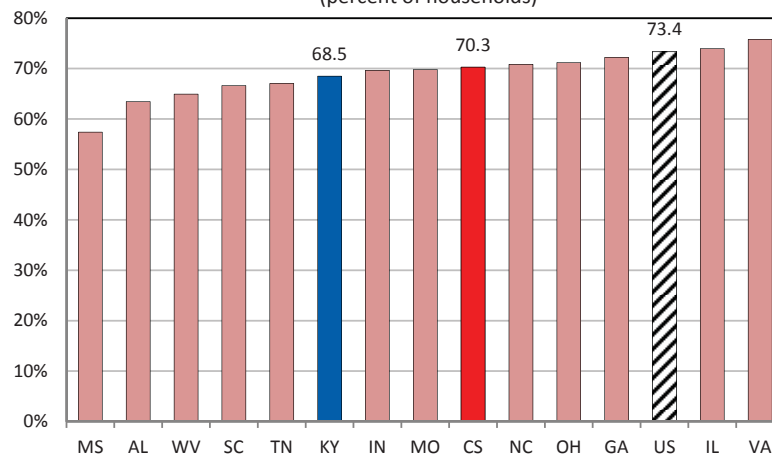


Source: National Science Foundation/National Center for Science and Engineering Statistics. National Patterns of R&D Resources, various years. Note: Missouri data are not available for 2011.

HIGH-SPEED INTERNET

A key driver that has accelerated globalization of the economy has been the emergence of nearly instantaneous data transfers enabled by broadband or high-speed Internet. Whether it is corporations doing business with one another, workers telecommuting, or consumers shopping for the latest bestselling book, high-speed Internet increasingly underpins 21st Century commerce. In the United States, an estimated 73.4 percent of the households have a broadband connection, compared to 70.3 percent for the competitor states and 68.5 percent for Kentucky. Numerous studies have identified measurable economic benefits associated with widespread access to high-speed Internet.

**Broadband Internet Access from Home, 2013,
Kentucky, Competitor States and the U.S.**
(percent of households)

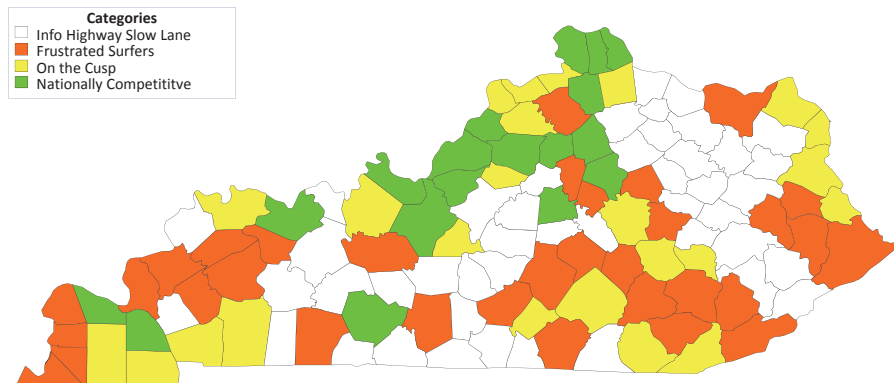


Source: American Community Survey, Table B28002, 2013, 1-Year estimate.
Note: "CS" is the weighted average of the competitor states.

BROADBAND ACCESS & USE BY COUNTY

There are 18 “Nationally Competitive” counties in Kentucky with respect to high-speed Internet availability and utilization. These counties have download speeds and high-speed Internet utilization rates that are equal to or greater than the U.S. average (i.e., at least 80 percent of the households have access to 25 mbps download and at least 70 percent have high-speed Internet access in their homes). The next group of (24) counties is “On the Cusp,” with at least 50 percent of the households having access to 25 mbps. Comprising the “Frustrated Surfers” category are 33 counties where less than 50 percent of the households have access to at least 25 mbps. Finally, the largest category, “Information Highway Slow Lane,” is comprised of the 45 counties without 25 mbps download capability. Over 85 percent of the 102 counties that are not “Nationally Competitive” have household broadband rates below 70 percent.

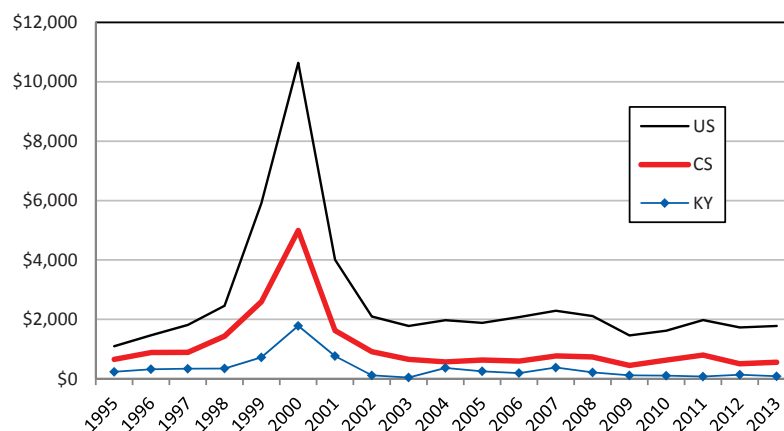
Estimated High-Speed Internet Infrastructure & Utilization, 2012



VENTURE CAPITAL

According to the Kauffman Foundation, most young companies are started from the savings of their founders and then sustained by positive cash flow. The next largest source of capital for young companies is credit cards, followed by borrowed money from family and friends, banks, and then venture capital. Research also shows that less than 20 percent of the fastest growing companies in the United States took any venture money. Moreover, venture capital investments are typically concentrated in a just few states, such as California and Massachusetts. Nevertheless, the level of venture capital in a state's economy is frequently used as an indicator of innovation capacity and entrepreneurial energy. In 2013, venture capital investments in Kentucky were \$84 per \$1 million of state gross domestic product—which was substantially lower than the competitor states (\$552) and the U.S. average (\$1,778).

**Venture Capital Investments,
Kentucky, Competitor States, and the U.S., 1995-2013**
(Current dollars, per \$1 million/state GDP)



Source: PricewaterhouseCoopers and Bureau of Economic Analysis

OVERVIEW

BECAUSE KENTUCKY, COMPARED TO THE U.S. AS A WHOLE, is more rural, less minority, and somewhat older, the Kentucky population has grown more slowly than the U.S. population; Kentucky has experienced an 8.7 percent increase since 2000 compared to 12.3 percent for the U.S. Yet, Kentucky's metropolitan areas, especially in Northern and Central Kentucky, have positive population momentum. These urban communities are attracting younger workers and families, many of whom are minorities. This is important since diversity is increasingly viewed as a necessity for creating economically vibrant and robust regional economies.

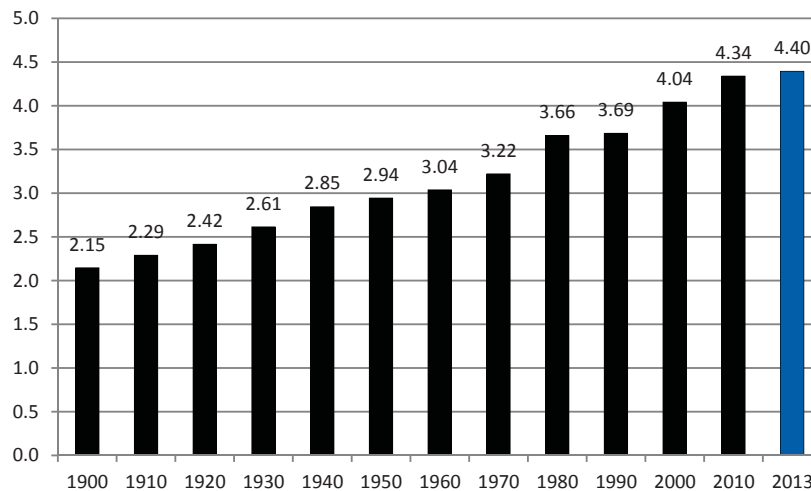
Rural Kentucky, however, is not as racially or ethnically diverse and over 40 counties lost population from 2000 to 2013. Throughout much of the delta regions of Western Kentucky and the mountains of Eastern Kentucky, negative population momentum has been building for decades. Out-migration over generations has reduced the youth population and suppressed natural increase. What we see emerging in many rural communities is a top-heavy age structure which increases demand for medical and other services for the elderly, while reducing the supply of labor to provide these services. As a result, the long-term viability of these communities is threatened.

Here we provide state- and county-level data on population trends in Kentucky, its competitor states, and the U.S. These figures and maps illustrate population changes within the state with respect to totals, minority composition, and age structure—all of which can have important impacts on the state and regional economies.

POPULATION TOTALS

Kentucky's population in the 2010 Census was 4,339,367, representing a 7.4 percent increase from the 2000 Census population of 4,041,769 and ranking it the 26th most populous state. As state demographer Michael Price at the University of Louisville has pointed out, while "the U.S. population grew at a faster pace (9.7 percent), the state population growth of nearly 300,000 persons is significant—the equivalent of adding a second Lexington." Kentucky's population was essentially flat from 1940 to 1970, growing by just over 13 percent while the U.S. population increased by over 55 percent. However, from 1970 to 2010, Kentucky's population increased by 35 percent, which is lower than the competitor states (41 percent) and the United States (52 percent), but represents a significant increase from the preceding decades. The most recent population estimate (2013) for Kentucky is 4,395,295.

Population Totals, Kentucky, 1900-2013
(millions)

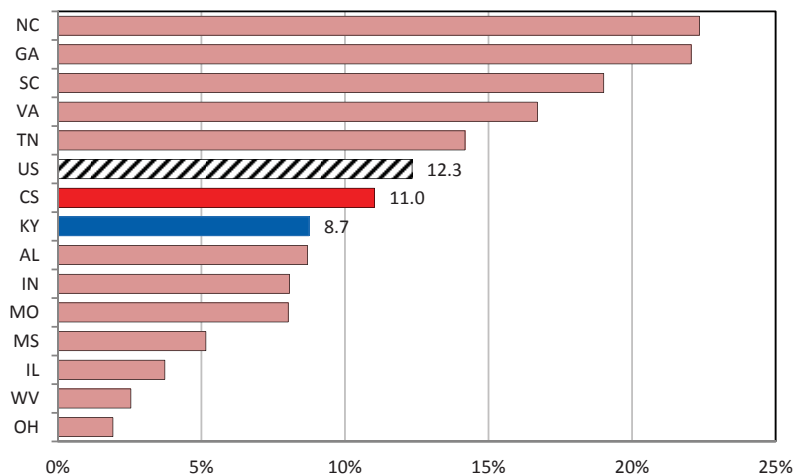


Source: U.S. Census Bureau

POPULATION CHANGE

At 8.7 percent, Kentucky sits in the middle of the competitor states with respect to population growth from 2000 to 2013. North Carolina and Georgia experienced the highest growth rates at around 22 percent. Ohio's population growth rate was the lowest among this group at about 2 percent.

Percentage Change in Population 2000-2013,
Kentucky, Competitor States, & the U.S.

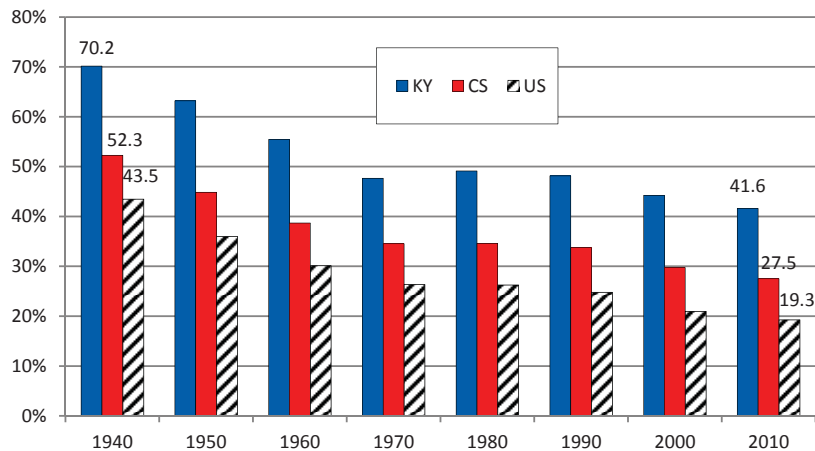


Source: U.S. Census Bureau

RURAL POPULATION

While Kentucky has become increasingly urban over the years, a significant portion of Kentucky's population live in rural areas—especially compared to its competitor states and the U.S. In the 2010 Census, nearly 42 percent of Kentucky's population resided in rural areas (the balance of 58 percent live in urban areas), compared to about 28 percent in the competitor states and around 19 percent in the U.S. Rural communities can have many unique and appealing assets that provide a foundation for economic development activities. For example, natural amenities such as mountains, lakes, streams, forests, and wildlife can be used to leverage economic development and attract individuals hoping to find more idyllic surroundings. At the same time, there are many development challenges associated with building diverse economies and providing an adequate infrastructure in rural areas.

**Population Living in Rural Areas,
Kentucky, Competitor States, and the U.S.**
(percent of individuals)



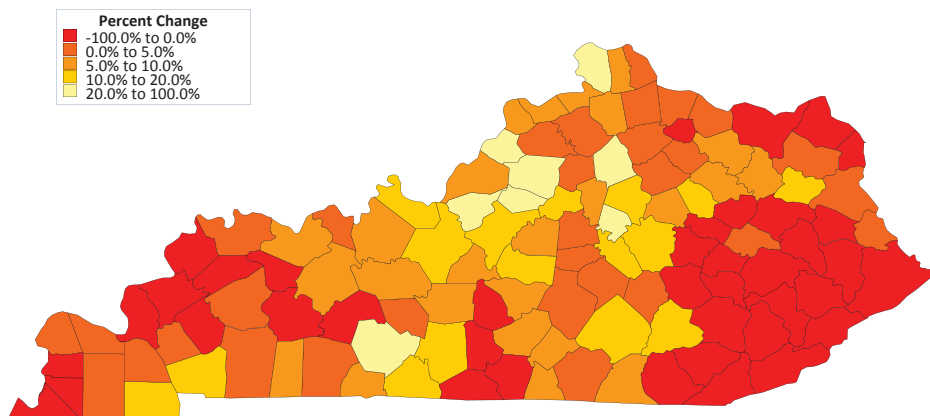
Source: U.S. Census Bureau

COUNTY POPULATION CHANGES

The geographic distribution of state population change from 2000 to 2013 is shown on this map. Multiple Eastern Kentucky counties lost population, along with several in the western part of the state. Overall, 40 counties lost population and another 33 grew by less than five percent. The largest declines were in Pike (-5,360), Harlan (-4,700), Floyd (-3,700), and Clay (-3,200). The fastest declines were in Fulton (-17.6%), Breathitt (-15.9%), Harlan (-14.2%), and Clay (-13%). On the other hand, population growth in much of Northern and Central Kentucky has been strong. Five counties with the largest growth—Jefferson (63,228), Fayette (47,916), Boone (38,451), Warren (25,848), and Scott (16,886), accounted for around half of the state total population growth. The fastest growing counties were Scott (51%), Spencer (50%), Boone (45%), Oldham (35%), and Shelby (33%).

POPULATION

Kentucky County Population Change: 2000-2013



Source: U.S. Census and Kentucky State Data Center

MINORITY POPULATION

In 2013, minorities comprised 37.4 percent of U.S. population, 31.3 percent in the competitor states, and 14.4 percent of the Kentucky population. Kentucky's racial and ethnic composition breaks down like this: white not Hispanic (85.6%), black (8.0%), Hispanic or Latino (3.3%), and Asian (1.3%). From 2000 to 2013, the state minority population grew almost 10 times faster than the non-Hispanic white majority—45.7 percent compared to 4.3 percent. However, the majority population increased faster in Kentucky (4.3%) than in the competitor states (3.3%) or nationwide (1.7%). Kentucky's minority population is more concentrated in the state's metro areas; in 2010, four of every five persons of color in Kentucky lived in metro areas. In today's global economy, diversity is increasingly important and recognized as a community asset.

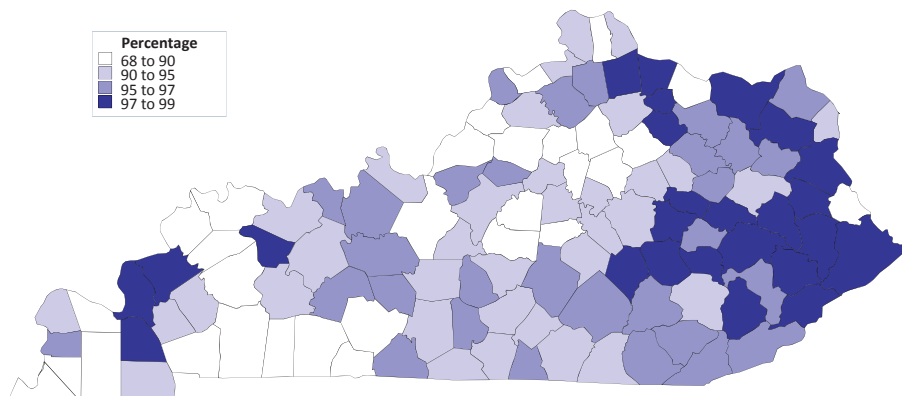
Population by Race and Hispanic or Latino Origin, Kentucky, Competitor States, and the U.S., 2000 and 2013						
Kentucky	2000		2013		Change 2000-2013	
	Number	Percent	Number	Percent	Number	Percent
Total Population	4,041,769	100.0	4,395,295	100.0	353,526	8.7
White not Hispanic	3,608,013	89.3	3,763,110	85.6	155,097	4.3
Minorities	433,756	10.7	632,185	14.4	198,429	45.7
Black	293,639	7.3	349,667	8.0	56,028	19.1
Hispanic or Latino	59,939	1.5	145,761	3.3	85,822	143.2
Asian	29,368	0.7	56,493	1.3	27,125	92.4
Other	50,810	1.3	80,264	1.8	29,454	58.0
Competitor States						
Total Population	77,563,807	100.0	86,118,698	100.0	8,554,891	11.0
White not Hispanic	57,331,465	73.9	59,194,894	68.7	1,863,429	3.3
Minorities	20,232,342	26.1	26,923,804	31.3	6,691,462	33.1
Black	14,051,151	18.1	16,108,360	18.7	2,057,209	14.6
Hispanic or Latino	3,570,835	4.6	6,553,475	7.6	2,982,640	83.5
Asian	1,364,596	1.8	2,463,640	2.9	1,099,044	80.5
Other	1,245,760	1.6	1,798,329	2.1	552,569	44.4
United States						
Total Population	281,421,906	100.0	316,128,839	100.0	34,706,933	12.3
White not Hispanic	194,552,774	69.1	197,836,231	62.6	3,283,457	1.7
Minorities	86,869,132	30.9	118,292,608	37.4	31,423,476	36.2
Black	33,947,837	12.1	39,076,459	12.4	5,128,622	15.1
Hispanic or Latino	35,305,818	12.5	54,071,370	17.1	18,765,552	53.2
Asian	10,123,169	3.6	16,093,994	5.1	5,970,825	59.0
Other	7,492,308	2.7	9,050,785	2.9	1,558,477	20.8

Source: Census 2000 SF1 & SF2 and Annual County Resident Population Estimates by Age, Sex, Race, and Hispanic Origin: April 1, 2010 to July 1, 2013, Population Division, U.S. Census Bureau.

WHITE, NON-HISPANIC POPULATION

In 2010, an estimated 63.7 percent of the U.S. population was “White non-Hispanic,” and Kentucky’s percentage was 86.3. Using this as a measure of diversity, Christian County—where Ft. Campbell is located—was the state’s most diverse at 68.6 percent. Fayette, Jefferson, and Fulton Counties were second, third, and fourth at 70.5, 73, and 73 percent respectively. The state’s least diverse counties are clustered mainly in the east, with several counties over 98 percent “White, non-Hispanic.” As we indicated on the previous page, diversity is increasingly viewed as a necessary community characteristic for creating a vibrant and robust local economy.

**White Alone, Not Hispanic or Latino, 2010
(percentage of the total population)**



Source: 2010 Census

POPULATION BY AGE GROUP

Kentucky's population is aging, evidenced by the median age increasing from 35.9 years to 38.1 years from 2000 to 2010. The U.S. median age, by comparison, was 37.2 years in 2010. The number of persons aged 65 and above increased by 129,459 or 25.6 percent from 2000 to 2013. However, it increased even more in the competitor states (28.7%) and the U.S. (27.8%). The elderly share of the total population rose only slightly, from 12.5 percent to 14.4 percent. The population under age 20 increased by 13,629 (1.2%), but the youth share fell slightly from 27.6 percent to 25.6 percent. The youth population increased more in the competitor states (2.1%) and the U.S. (2.2%)

**Population by Age Group,
Kentucky, Competitor States, and the U.S., 2000 and 2013**

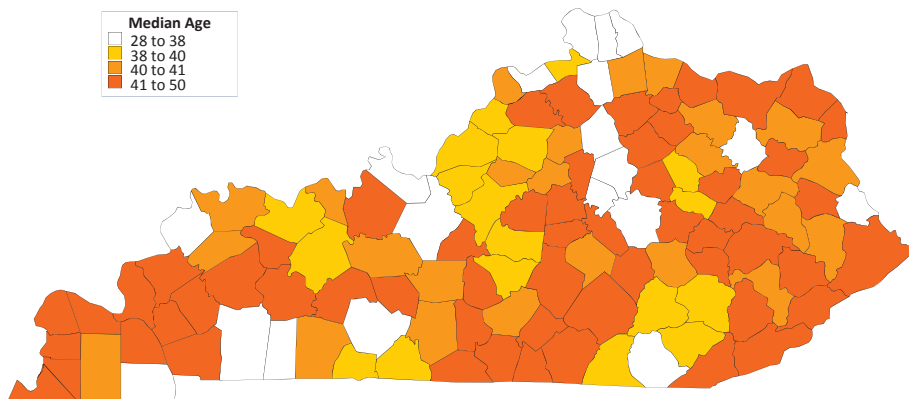
Kentucky	2000		2013		Change 2000-2013	
	Number	Percent	Number	Percent	Number	Percent
Total	4,041,769	100.0	4,395,295	100.0	353,526	8.7
Under 20	1,113,644	27.6	1,127,273	25.6	13,629	1.2
20-24	283,032	7.0	313,665	7.1	30,633	10.8
25-64	2,140,300	53.0	2,320,105	52.8	179,805	8.4
65 and above	504,793	12.5	634,252	14.4	129,459	25.6
Competitor States						
Total	77,563,807	100.0	86,118,698	100.0	8,554,891	11.0
Under 20	22,005,143	28.4	22,463,167	26.1	458,024	2.1
20-24	5,333,258	6.9	6,187,157	7.2	853,899	16.0
25-64	40,773,898	52.6	45,303,540	52.6	4,529,642	11.1
65 and above	9,451,508	12.2	12,164,834	14.1	2,713,326	28.7
United States						
Total	281,421,906	100.0	316,128,839	100.0	34,706,933	12.3
Under 20	80,473,265	28.6	82,248,087	26.0	1,774,822	2.2
20-24	18,964,001	6.7	22,795,438	7.2	3,831,437	20.2
25-64	146,992,887	52.2	166,381,240	52.6	19,388,353	13.2
65 and above	34,991,753	12.4	44,704,074	14.1	9,712,321	27.8

Source: Census 2000 SF1 and 2013 American Community Survey.

MEDIAN AGE

The county-level median age in Kentucky in 2013 ranged from a low of 28.6 in Chrisitan County to a high of 48.5 in Lyon County. In general, counties with military installations or college campuses will have lower median ages. Rowan, Warren, Fayette, Calloway, Madison and Hardin Counties all had median ages below 36. Marshall (45), Trigg (45.1), Robertson (45.7), Livingston (45.9), and Hickman Counties (46.3) complete the top 6 “oldest” counties in Kentucky when measured by median age.

Median Age by County, 2013



Source: U.S. Census Bureau

OVERVIEW

KENTUCKY'S GENERAL FUND RECEIPTS GREW 12.8 PERCENT IN November 2014 compared to a year earlier, with strong growth evidenced in both income and sales tax collections. Despite these strong revenue gains, Kentucky's tax system needs to change: a broader tax base is needed so that revenue can keep pace with future economic growth and changes are needed to improve Kentucky's economic competitiveness.

Kentucky's economy and demographic mix are changing, and the revenue system needs to change with it. Over two years ago we completed a report for the *Governor's Blue Ribbon Commission on Tax Reform* in which we concluded that the state was facing a \$1 billion structural deficit by 2020 if current trends continued. While the recent revenue collections suggest a more optimistic outlook, the long-term outlook has not changed.

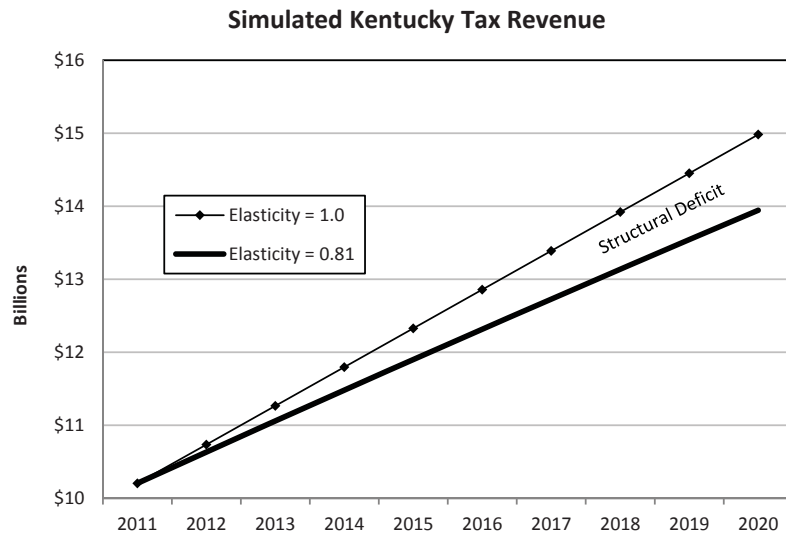
The Pew Charitable Trusts reports in its *Fiscal 50: State Trends and Analysis* that the uneven economic recovery has placed downward pressure on tax receipts in several states, including Kentucky. In fact, tax receipts had not fully rebounded by the second quarter of 2014 in 29 states, compared to their high point over the last eight-and-a-half years. As of the second quarter of 2014, Kentucky's inflation adjusted tax receipts were 0.5 percent below the high point that occurred in the second quarter of 2006. Moreover, Pew also reports that Kentucky is not well positioned for another economic downturn. The state's budget reserve trust fund, at about \$163 million, is equal to 1.7 percent of spending and would last about 6.3 days—the sixth lowest of the states.

On top of these revenue issues, there are a number of other factors likely to intensify state-level budgetary pressures in the future, such as Kentucky's \$21.4 billion unfunded pension obligation, \$6.2 billion unfunded retiree health care costs, and \$9.1 billion in debt. Coupled with long-term fiscal problems at the federal level, where Kentucky receives significant intergovernmental transfers equal to about 24 percent of total revenue, and pressures to increase education and infrastructure expenditures, the state faces significant future financial challenges.

These forces are requiring policy makers to consider new methods and approaches in public finance, like public-private partnerships (P3s) and local-option sales taxes, to ensure the state and its regions have sufficient revenue and expenditures to remain economically competitive and fulfill obligations to the state's citizens.

STRUCTURAL DEFICIT

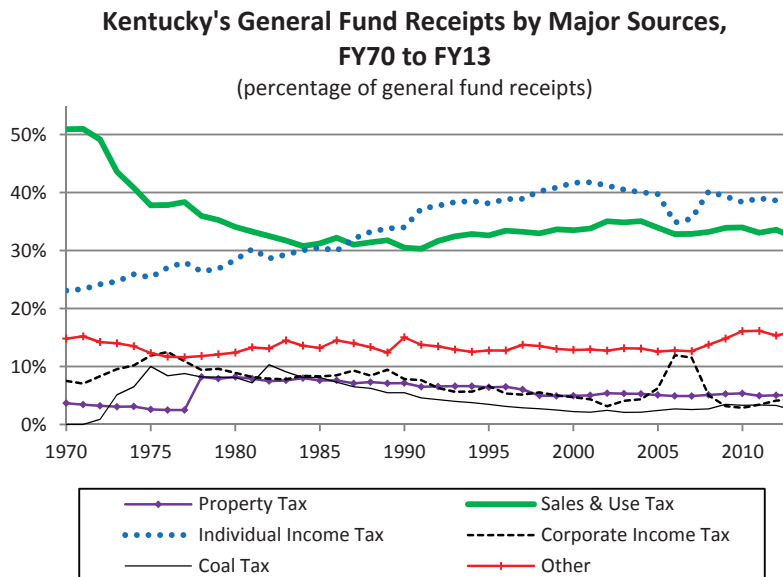
While the work of the Governor's Blue Ribbon Commission on Tax Reform was conducted over two years ago, there has not been significant changes to the state's tax and revenue system. We concluded then that the state had a substantial structural deficit and there is no evidence to suggest the outlook has changed. Our analysis in 2012 showed that revenue elasticity is projected to be about 0.81 without fundamental tax modernization, which reflects a structural deficit. Ideally, revenue elasticity would be 1.0, indicating that, on average, state revenue was changing at the same rate as the state's economy. Without fundamental tax reforms Kentucky could face a \$1 billion shortfall by 2020, and could find itself at a competitive disadvantage to neighboring states for business growth, retention, and recruitment.



Source: Report to the Governor's Blue Ribbon Commission on Tax Reform by Economic Consultants, Sept. 2012

GENERAL FUND RECEIPTS BY SOURCE

Two sources of revenue—the individual income tax and the sales and use tax—account for 72 percent of Kentucky general fund revenue (FY2013). This figure illustrates how Kentucky’s revenue system has fundamentally changed since 1970. Forty years ago the sales and use tax comprised 51 percent of Kentucky’s general fund receipts while income tax collections accounted for 23 percent. However, by the mid-1980s the income tax accounted for more general fund revenue than the sales and use tax. The changing distribution of tax receipts reflects more basic changes in the economy—the gradual shift away from making products and toward providing services. Most states, including Kentucky, tend to apply a *broad-base* sales tax to goods but not services. Consequently, the state’s tax base is gradually becoming narrower and losing elasticity—a measure of whether revenue is keeping pace with the economy.

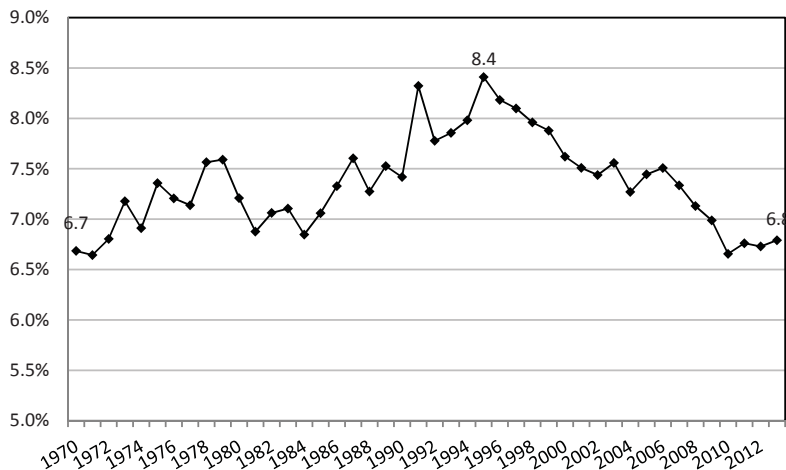


Source: Authors' calculations based on data from the Kentucky Finance and Administration Cabinet and the Kentucky Revenue Cabinet

TAX COLLECTIONS AND PERSONAL INCOME

Kentucky's recurring budgetary problems are due, in part, to the long-term decline in revenue elasticity. There are several economic, demographic, and political factors contributing to the gradual reduction in elasticity. Regardless of how we assess the adequacy of the revenue structure, Kentucky's main revenue sources are growing slower than its economy. This point is illustrated by examining Kentucky's total tax collections as a percentage of personal income, which has declined steadily from its peak of 8.52 percent in 1995 to 6.8 percent in 2013. If these trends continue, we estimate that tax revenue as a percentage of the economy will decline to below 6.5 percent by 2020—a level not seen in Kentucky since 1968.

Kentucky Total State-Level Tax Collections as a Percentage of Total Personal Income, 1970-2013

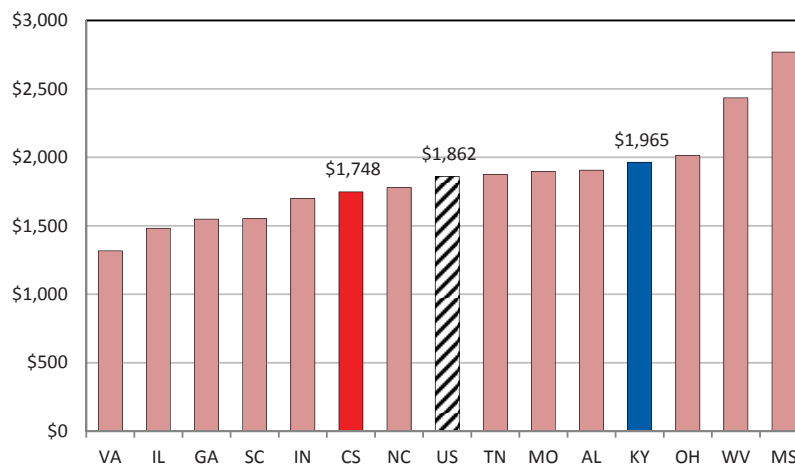


Source: Author's calculations based on data from the U.S. Department of Commerce, Bureau of Economic Analysis and U.S. Census Bureau, State Government Tax Collections, various years

REVENUE FROM FEDERAL TRANSFERS

Kentucky receives a significant amount of its total revenue from federal intergovernmental transfers. In 2012 this amounted to 24.1 percent of Kentucky's total revenue. The competitor state average was about 20 percent and the U.S. average was about 19 percent. These transfers are mainly for health care (Medicaid), education, transportation, and public safety. On per capita basis, Kentucky received about \$1,965 in revenue from federal transfers, compared to \$1,748 and \$1,862 for the competitor states and U.S., respectively. Among the competitor states, Mississippi had the highest amount at \$2,769 and Virginia the lowest at \$1,317.

**State and Local Revenue From Federal Transfers,
Per Capita, 2012, Kentucky, Competitor States, & the U.S.**

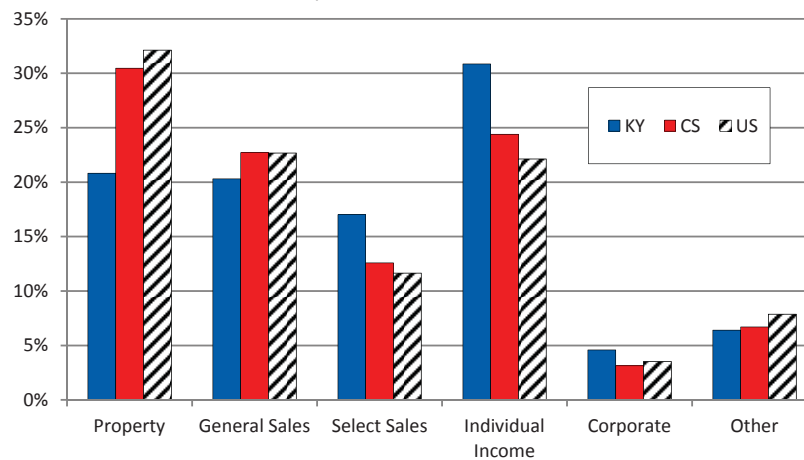


Source: U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances

STATE AND LOCAL REVENUE BY SOURCE

This figure shows the percentage of revenue collected by each reported tax source for Kentucky and a weighted-average of its competitor states and the U.S. Kentucky is significantly less reliant on property taxes than its competitors (and the U.S.), who raise a much larger share of local tax revenue from the property tax, and particularly those states to the north of Kentucky. Kentucky has no general sales tax option for any local governments, something a number of its competitor states (and 35 states in the U.S.) allow. Unlike many of its competitors, Kentucky allows local individual income (occupation license) taxation (only 13 states permit local income taxation). Not surprisingly, then, Kentucky collects a smaller share of combined state and local tax revenues from sales taxation and more from income taxation.

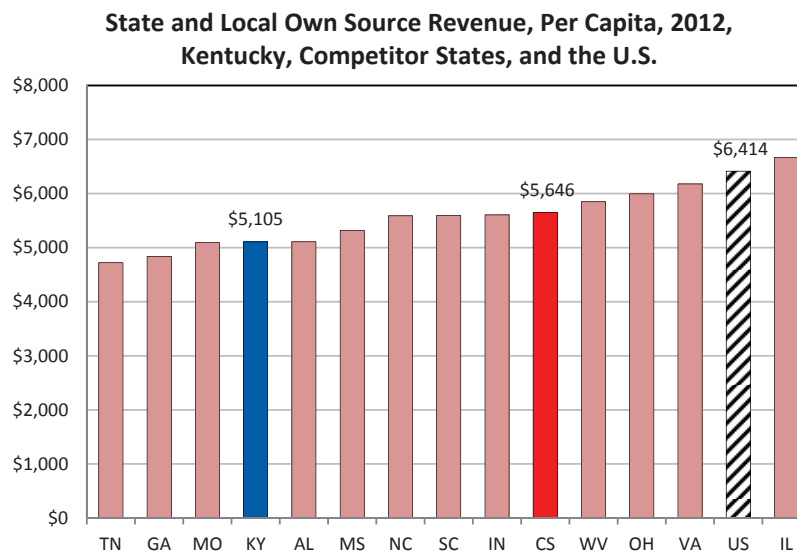
State and Local Tax Revenue by Source, 2012
Kentucky, Competitor States, and the U.S.
 (percent of total tax revenue)



Source: U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances

STATE AND LOCAL OWN SOURCE REVENUE

Since states differ in the relative distribution of tax burdens between state and local governments, any comparison of revenue burdens among states requires a consideration of combined state and local revenue burdens. Here we report state and local own revenue burdens for Kentucky and its competitor states in 2012. On a per capita basis, Kentucky's per capita own-source state and local revenue was \$5,105 in 2012, lower than the competitor state average of \$5,646 as well as the U.S. average of \$6,414.

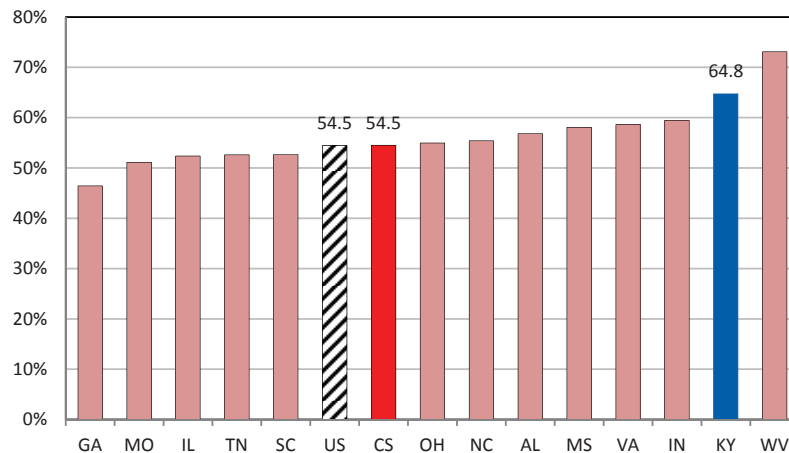


Source: U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances

STATE PORTION OF TOTAL REVENUE

State government in Kentucky collects 64.8 percent of state and local own-source revenues (2012); only West Virginia, which collects 73.1 percent through the state, is more centralized. All of the other competitor states collect less than 60 percent through state sources. Conversely, Georgia collects over 50 percent from local revenue sources. The competitor state and U.S. averages are both about 54 percent, indicating substantially less centralization at the state level compared to Kentucky.

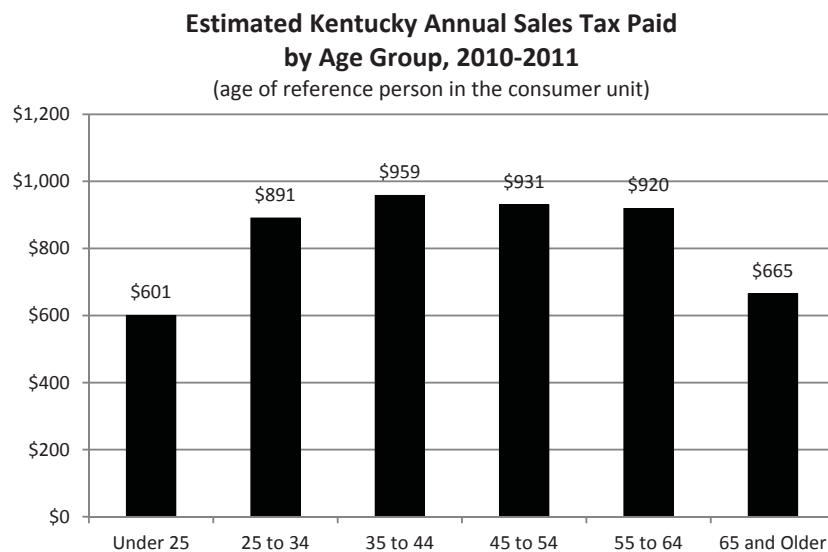
**State Portion of Total Revenue, 2012,
Kentucky, Competitor States, and the U.S.**
(percentage of state and local own source revenue)



Source: U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances

SALES TAX BY AGE GROUP

As we describe in the Population section of this report, Kentucky's population is aging. Individuals over 65 years of age tend to spend less money in general and tend to concentrate more of their expenditures in nontaxed areas such as health care services and food at home. As a result, sales and use tax collections, which comprise 32.3 percent of the state's total general fund receipts, will be affected as the population ages. Using data from the Consumer Expenditure Survey, we estimate the average annual sales generated by households of certain age groups. Households headed by someone 65 and older pay about \$665 in sales tax annually, with every other age group over 25 years old paying \$891 to \$959. This analysis illustrates how basic demographic factors are forcing policy makers to examine Kentucky's tax system and identify ways to put it on a more sustainable long-term path.

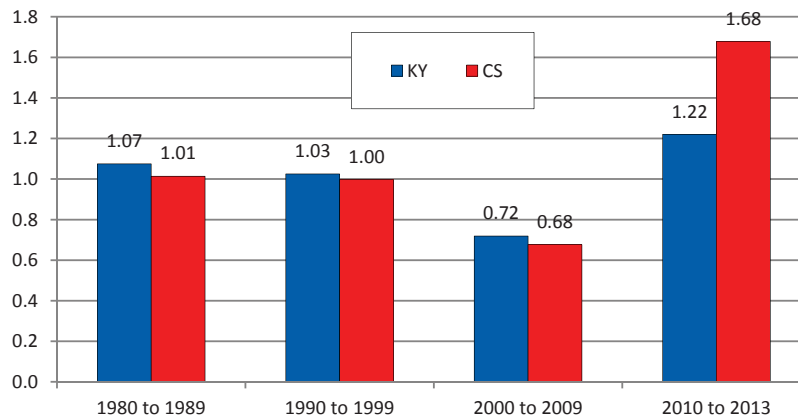


Source: Author's analysis of Consumer Expenditure Survey data, South Region, 2010-2011 average.

GROWTH RATES, TAXES AND INCOME

Revenue growth rates are affected by both changes in the revenue base and tax rates. Most states' revenue systems failed to keep pace with overall economic growth during the decade from 2000 to 2009 due to one or both of these factors. Obviously the Great Recession had a significant impact on both taxes and income during this period. Using the ratio between the compound annual growth rates (CAGR) of revenue and personal income, we compare Kentucky to competitor states during four time periods—1980 to 1989, 1990 to 1999, 2000 to 2009, and 2010 to 2013. A ratio of 1.0 indicates that the revenue is growing at the same rate as the economy. In Kentucky as well as in many of the competitor states the growth in total tax revenue slowed relative to the economy in the 2000s. As shown in the graph, the ratio between Kentucky's total tax CAGR and personal income CAGR declined to 0.72 with the competitor states declining to 0.68. By comparison, this ratio was around 1.0 in the earlier periods. More recently the ratio has been much higher in the competitor states compared to Kentucky, but given the limited number of years for analysis and comparison it is not possible to draw strong conclusions from the 2010-2013 ratios.

**Ratio Between Compound Annual Growth Rates of
Total Taxes and Personal Income, Various Periods,
Kentucky and Competitor States**

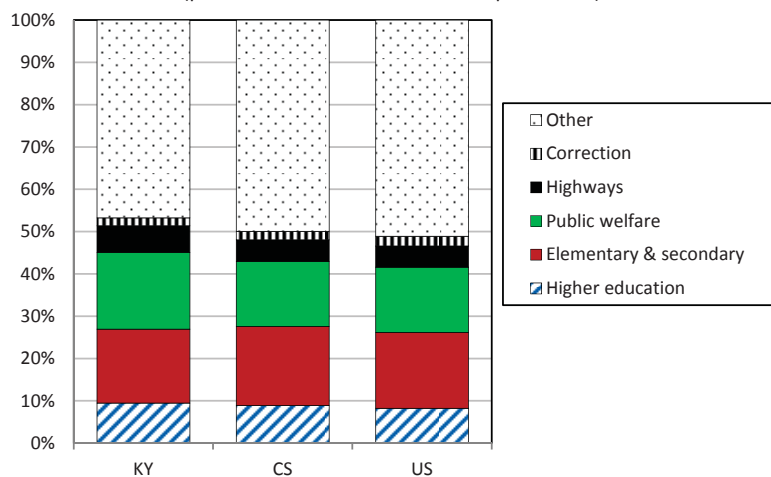


Source: U.S. Census Bureau, Bureau of Economic Analysis & State Government Tax Collections
Note: Total taxes are adjusted for sales tax increases, using 1980 as the base year of analysis.

STATE AND LOCAL EXPENDITURES

Here we present data that illustrate Kentucky's state and local spending by selected functional categories: public welfare, public assistance, and Medicaid; elementary and secondary education; higher education; transportation; and corrections. These five categories account for 53 percent of state and local government expenditures (2012), compared to 50 percent by the competitor states and about 47 percent for the U.S. As a percentage of total state and local expenditures, Kentucky spends more than average on higher education, public welfare, and highways, but less than average on elementary and secondary education and corrections. The Other category includes environment, housing, government administration, interest paid on debt, utilities, and insurance.

**Distribution of Selected State and Local Expenditures,
2012, Kentucky, Competitor States, and the U.S.**
(percent of total state and local expenditures)

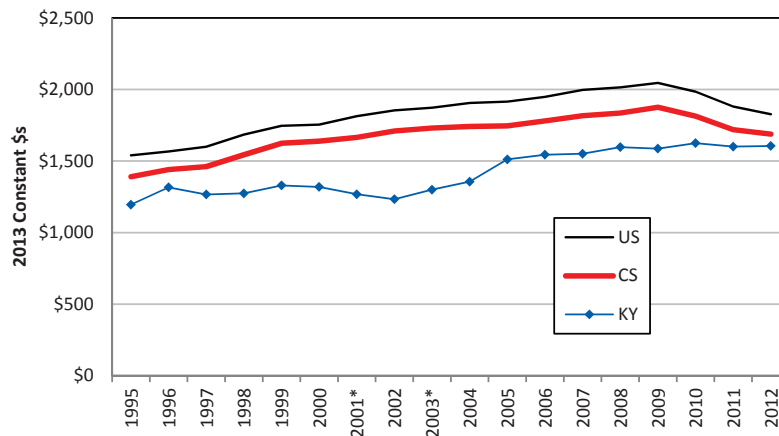


Source: U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances

EDUCATION EXPENDITURES

State and local expenditures for elementary and secondary education are below average in Kentucky compared to the competitor states, but still increased during this time period in constant 2013 dollars. Despite demonstrating the highest growth rate in per capita state and local education spending from 2001 to 2009 among the competitor states, Kentucky ranks 34th in per capita elementary and secondary education spending (2012 nominal dollars). Kentucky's per capita spending is \$1,582, compared to \$1,663 and \$1,801 for the competitor states and the U.S., respectively (in nominal dollars).

State and Local Elementary and Secondary Education Expenditures, Per Capita, 1995-2012, Kentucky, Competitor States, and the U.S.

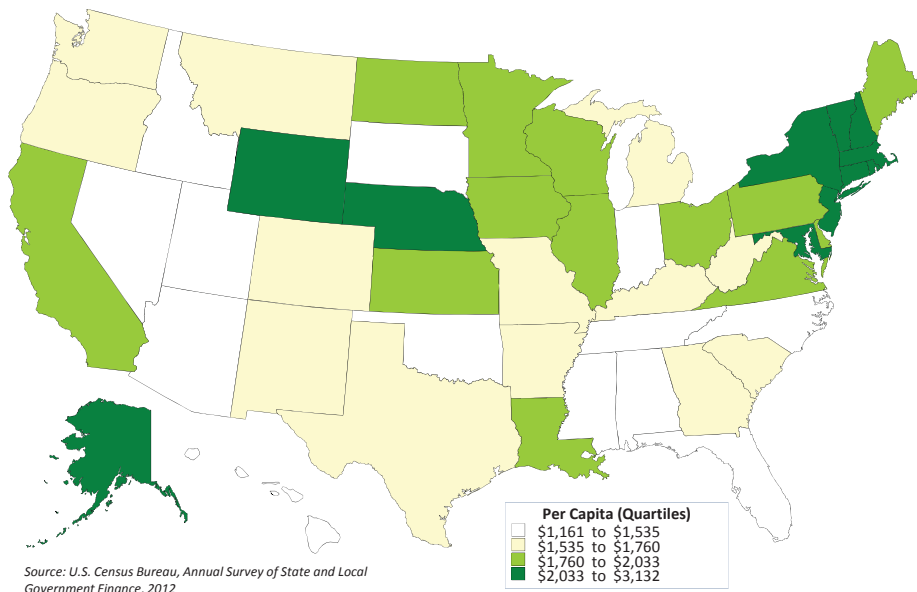


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance
 Note: KY and CS data for 2001 and 2003 are interpolated.

EDUCATION EXPENDITURES IN THE U.S.

One way to reasonably assess a state's position relative to other states is by ranking the states and placing them into four more or less equal groups, or quartiles. Kentucky's per capita state and local expenditures for elementary and secondary education are in the second quartile of all states. Alaska is the highest at \$3,131 and Idaho is the lowest at \$1,161. Kentucky's per capita spending is \$1,582.

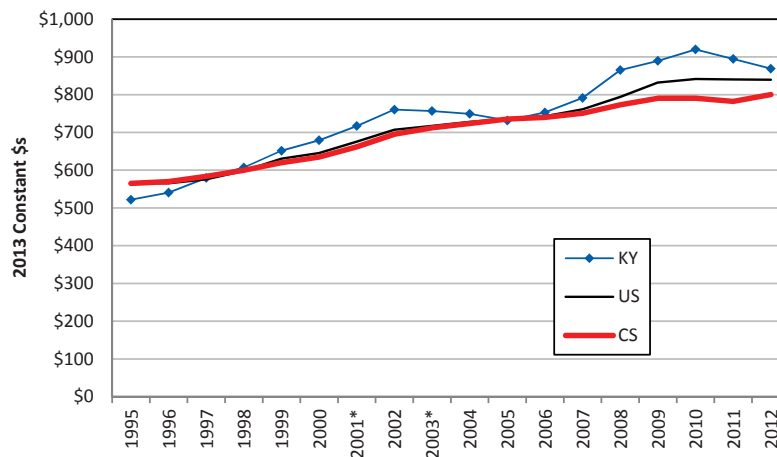
Elementary and Secondary Education Expenditures, 2012



HIGHER EDUCATION EXPENDITURES

In the U.S., about 85 percent of all higher education expenditures are made at the state level with 15 percent made at the local level. However, in Kentucky, 100 percent of higher education spending takes place at the state level. On a per capita basis, Kentucky ranks 27th among all states with respect to state and local funding for higher education, and increased considerably in constant 2013 dollars from 1995 to 2012. Kentucky's per capita spending was \$856, while the competitor states (\$789) and U.S. (\$827) averages were lower (in nominal dollars). This spending represents net expenditures once charges (i.e., tuition) have been removed from the total.

**State and Local Higher Education Expenditures,
Per Capita, Kentucky, Competitor States, & the U.S.**

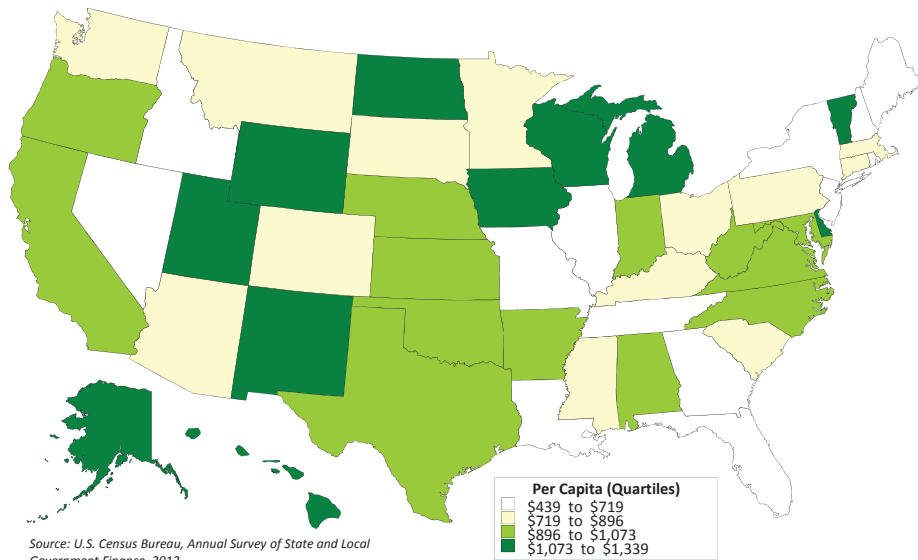


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance
 Note: KY and CS data for 2001 and 2003 are interpolated.

HIGHER EDUCATION EXPENDITURES IN THE U.S.

Kentucky's per capita state and local expenditures for higher education rank it in the second quartile of states (i.e., a quartile is four groups of roughly equivalent size). North Dakota is the highest at \$1,338 and Nevada is the lowest at \$439. Kentucky's per capita spending is \$856.

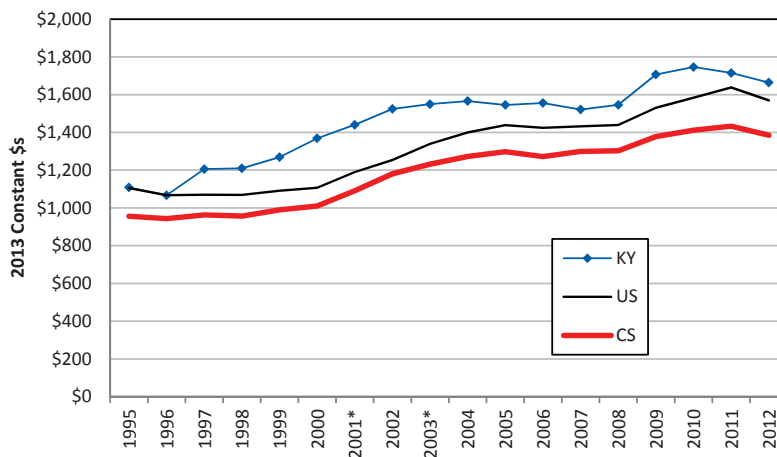
Higher Education Expenditures, 2012



PUBLIC WELFARE & PUBLIC ASSISTANCE

The Census Bureau's public welfare category covers expenditures associated with three Federal programs—Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), and Medicaid. The figure shows that Kentucky's spending in the broad category of public welfare is above average compared to the competitor states and the U.S. Kentucky ranks 20th in combined state and local spending for public welfare, at least when measured on a per capita basis, with spending increasing in constant 2013 dollars during this time. Kentucky's per capita spending in this category (in 2012 nominal dollars), \$1,640, exceeds both the competitor state average (\$1,365) and the U.S. average (\$1,547).

**State and Local Public Welfare Expenditures, Per Capita,
1995-2012, Kentucky, Competitor States, and the U.S.**

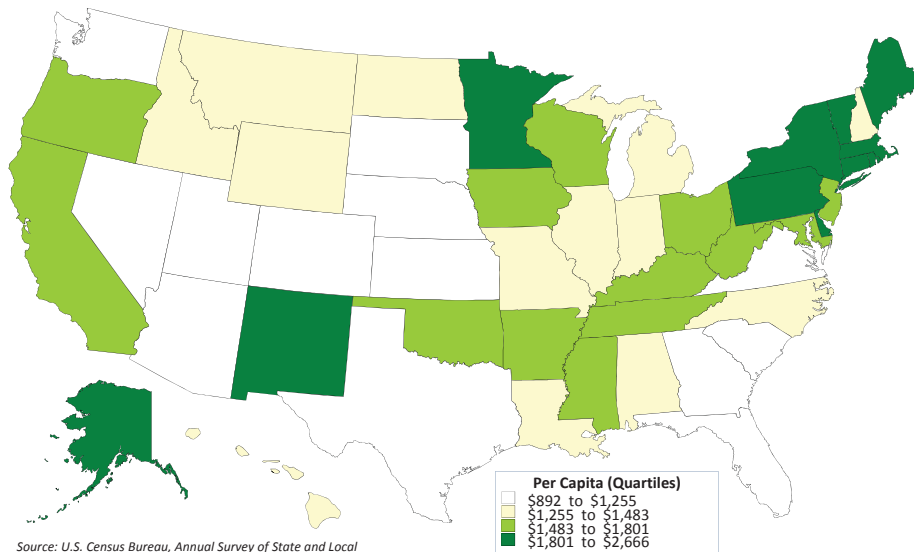


Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance
Note: KY and CS data for 2001 and 2003 are interpolated.

PUBLIC WELFARE & PUBLIC ASSISTANCE IN THE U.S.

Kentucky's per capita state and local expenditures for public welfare and public assistance place it in the third quartile of states (i.e., a quartile is four groups of roughly equivalent size). Alaska is the highest at \$2,665 and Nevada is the lowest at \$892. Kentucky's per capita spending is \$1,640.

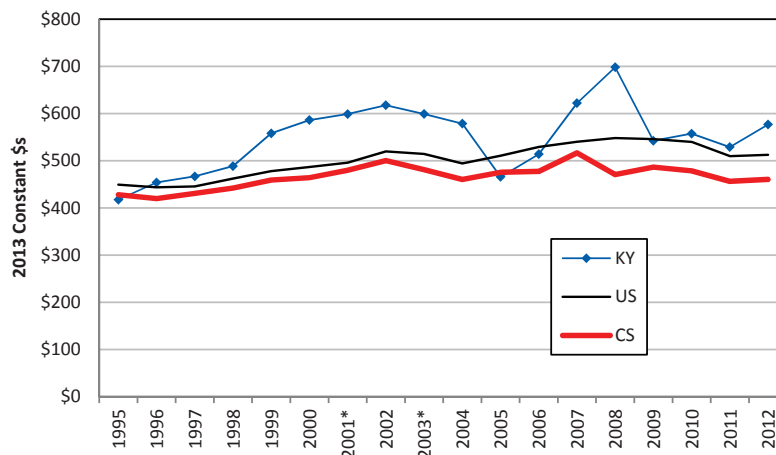
Public Welfare Expenditures, 2012



HIGHWAYS EXPENDITURES

Compared to the competitor states, Kentucky's state and local transportation expenditures in 2012 were slightly above average when measured on a per capita basis. Kentucky's \$568 (in nominal dollars) is higher than the U.S. average of \$505 and the competitor state average of \$454. Kentucky is ranked 23rd nationally.

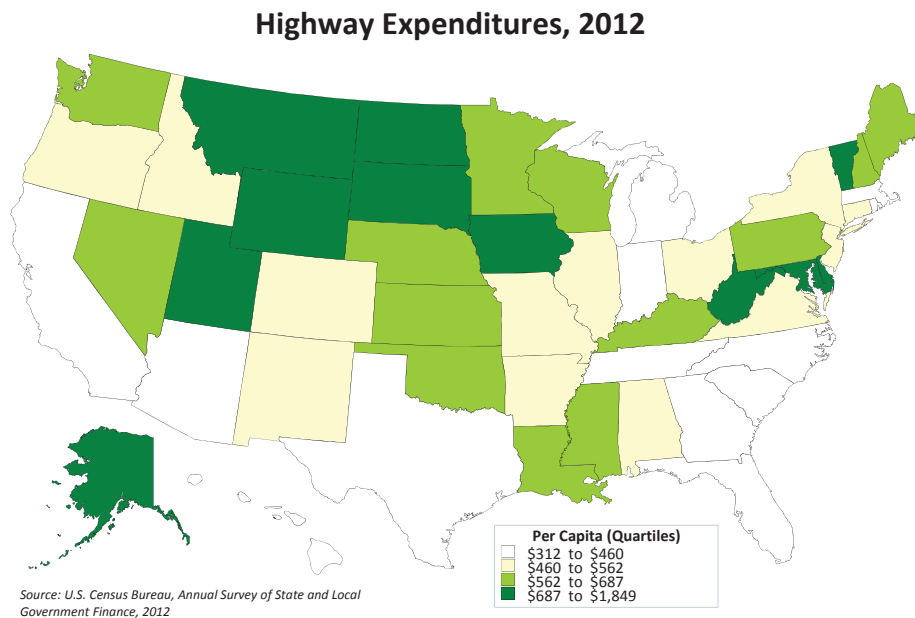
**State and Local Highway Expenditures, Per Capita,
1995-2012, Kentucky, Competitor States, and the U.S.**



Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance
Note: KY and CS data for 2001 and 2003 are interpolated.

HIGHWAYS EXPENDITURES IN THE U.S.

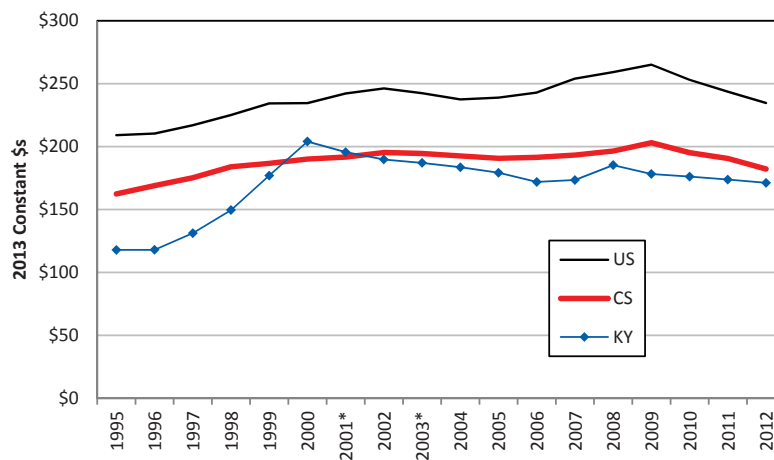
Kentucky's per capita state and local expenditures for highways land it in the third quartile among the states (i.e., a quartile is four groups of roughly equivalent size). North Dakota is the highest at \$1,848 and Georgia is the lowest at \$312. Kentucky's per capita spending is \$568.



CORRECTIONS EXPENDITURES

Kentucky's state and local spending on corrections—jails and prisons—is about average compared to the competitor states, and ranks 37th nationally. In 2012 Kentucky's state and local per capita expenditures on corrections was \$169 (in nominal dollars), which was less than the competitor states average (\$179) and the U.S. average (\$231). From 2000 to 2012 Kentucky's state and local spending on corrections decreased on a per capita basis—when measured in constant 2013 dollars.

State and Local Corrections Expenditures, Per Capita, 1995-2012, Kentucky, Competitor States, and the U.S.



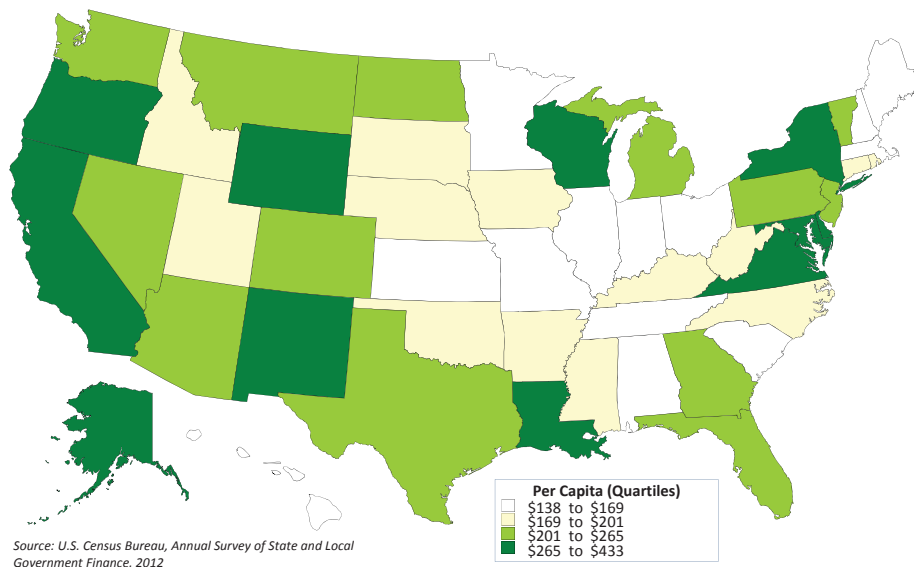
Source: U.S. Census Bureau, Annual Survey of State and Local Government Finance

Note: KY and CS data for 2001 and 2003 are interpolated.

CORRECTIONS EXPENDITURES IN THE U.S.

Kentucky's per capita state and local expenditures for corrections rank it in the second quartile among the states (i.e., a quartile is four groups of roughly equivalent size). Alaska is the highest at \$432 and New Hampshire is the lowest at \$138. Kentucky's per capita spending is \$169.

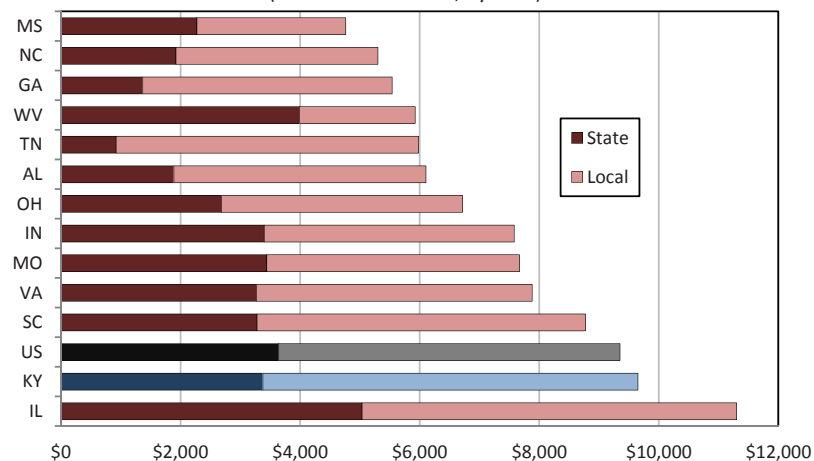
Corrections Expenditures, 2012



DEBT

State and local government debt is defined as “all interest-bearing short-term credit obligations and all long-term obligations incurred in the name of the government and all its dependent agencies, whether used for public or private purposes.” Governments issue bonds and incur debt for big-ticket items like roads or large construction projects. In several states, including Kentucky, there has even been discussion about issuing bonds to get public employees retirement systems on firmer financial ground. Nationally, state and local governments had \$2.9 trillion in outstanding debt in 2012, with 61 percent at the local government level and 39 percent at the state government level. The figure shows combined state and local debt per capita, with Kentucky second among the competitor states at \$9,700, 35 percent of which is held by state government. The competitor state per capita debt is \$7,325 (39 percent held by state governments) and the U.S. per capita debt for state and local governments is \$9,373.

Debt Outstanding, Per Capita, 2012
Kentucky, Competitor States, and the U.S.
 (state and local debt, by total)



Source: U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances

VARIABLES

Advanced Placement Exam Mastery—College Board, AP Report to the Nation, various years, <apreport.collegeboard.org/>.

Agriculture and GDP—U.S. Department of Commerce, Bureau of Economic Analysis, Gross domestic product (GDP) by state (millions of current dollars).

Air Quality—Kentucky Energy and Environment Cabinet, Department for Environmental Protection, Division for Air Quality, Fiscal Year 2014 Annual Report <air.ky.gov/>. The data on air quality trends were obtained via email from the Jennifer Miller, Division for Air Quality on November 5, 2014.

Average Weekly Wages—U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages, total, all industries, total covered, all establishment sizes, all employees <www.bls.gov/cew/>. The CPI data are for all urban consumers.

Banking Status—FDIC National Survey of Unbanked and Underbanked Households, 2013.

Bridges—U.S. Department of Transportation, Federal Highway Administration, Bridges and Structures <www.fhwa.dot.gov/bridge/deficient.cfm>.

Broadband Access & Use by County—Refer to Michael T. Childress, “The Internet in Kentucky: Life in the Slow Lane,” CBER Issue Brief 9, September 2012 <cber.uky.edu/>.

Broadband—National Telecommunications and Information Administration (NTIA), National Broadband Map <www.broadbandmap.gov>.

Business Bankruptcies—The Administrative Office of the U.S. Courts <www.uscourts.gov/Statistics/BankruptcyStatistics/quarterly-filings-3-month-chapter-district.aspx>. The establishment data from the County Business Patterns.

Charitable Contributions—Internal Revenue Service, Statistics of Income <www.irs.gov/uac/SOI-Tax-Stats---Historic-Table-2>.

Child Poverty—U.S. Census Bureau, Poverty Status in the past 12 months, 2013 American Community Survey 1-Year Estimates <www.census.gov/acs/www/>.

Chronic Disease by County (Number & Percent)—Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011-2013. To estimate county-level percentages and numbers we use a special grouping of counties developed by the University of Kentucky Markey Cancer Control Program and College of Public Health under the direction of the Kentucky Department for Public Health.

Chronic Disease Risk by Age Group—Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2013.

Coal Production—Kentucky Energy and Environment Cabinet, Kentucky Quarterly Coal Reports <energy.ky.gov/Pages/CoalFacts.aspx>.

College Attainment by County—U.S. Department of Commerce, American Community Survey, 2008-2012, 5-year estimates <www.census.gov/acs/www/>.

VARIABLES

College Attainment—U.S. Department of Commerce, American Community Survey, 2013, 1-year estimates <www.census.gov/acs/www/>.

College Readiness—The Condition of College & Career Readiness, 2014, various state reports, ACT, Inc. The Competitor States values reflect a weighted average of the 12 states.

Commuting—U.S. Census, American Community Survey, 5-Year Estimate, 2009-2013, Table DP03-Selected Economic Statistics.

Corrections Expenditures (in the U.S.)—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

County Population Changes—Census data obtained from the Kentucky State Data Center <ksdc.louisville.edu/>.

County-Level Innovation Index—Innovations in America's Regions, a project funded in part by the U.S. Commerce Department's Economic Development Administration. Work was conducted by the Purdue Center for Regional Development, the Indiana Business Research Center at Indiana University's Kelley School of Business, and other research partners. Data are available online at <www.statsamerica.org/innovation/index.html>.

Crime Rate—Federal Bureau of Investigation, Crime in the United States 2013, Table 4, Crime in the United States, by Region, and Table 5, Crime in the United States by State <www.fbi.gov/>.

Criminal Offense Rate by County—Crime in Kentucky, 2013, Kentucky State Police, available at <www.kentuckystatepolice.org/data.htm>.

Criminal Offenses—Crime in Kentucky, 2013, Kentucky State Police, available at <www.kentuckystatepolice.org/data.htm>.

Debt—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate>.

Disability Income (DI)—U.S. Social Security Administration, Office of Retirement and Disability Policy, Office of Research, Evaluation, and Statistics, Annual Statistical Report on the Social Security Disability Insurance Program, 2013 <www.socialsecurity.gov>.

Disability—U.S. Department of Commerce, American Community Survey, 2011-2013, 3-year estimates <www.census.gov/acs/www/>.

Earned Income per Capita (by County)—U.S. Department of Commerce, Bureau of Economic Analysis.

Earnings & Employment by Education—Calculated from IPUMS-CPS, March 2012-2014 data, Miriam King, Steven Ruggles, J. Trent Alexander, Sarah Flood, Katie Genadek, Matthew B. Schroeder, Brandon Trampe, and Rebecca Vick. Integrated Public Use Microdata Series, Current Population Survey: Version 3.0. [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

Education Expenditures (in the U.S.)—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Educational Achievement Gap—National Center for Education Statistics, NAEP Data

VARIABLES

Explorer <nces.ed.gov/nationsreportcard/naepdata/dataset.aspx>.

Elderly Poverty—U.S. Census Bureau, Poverty Status in the past 12 months, 2013 American Community Survey 1-Year Estimates <www.census.gov/acs/www/>. The Employee Benefit Research Institute 2014 Retirement Confidence Survey results are available at <www.ebri.org/surveys/rcs/>.

Electricity Costs for Industrial Customers—U.S. Energy Information Administration, Form EIA-826 detailed data to construct annual averages (2014 estimates use data through August 2014) <www.eia.gov/electricity/data/eia826/>.

Employment and Earnings by Economic Sector—U.S. Census, Bureau of Economic Analysis.

Employment by Foreign Companies—Foreign Direct Investment in the U.S., Majority-Owned Bank and Nonbank U.S. Affiliates, Employment. Bureau of Economic Analysis, Regional Economic Accounts & International Data.

Employment by Sector—U.S. Department of Labor, Bureau of Labor Statistics <www.bls.gov/sae/>.

Employment-Population Ratio—U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

Energy Consumption by End-Use Sector—U.S. Energy Information Administration, State Energy Data System, Table C1: Energy Consumption Overview: Estimates by Energy Source and End-Use Sector, 2012 <www.eia.gov/state/seds/seds-data-complete.cfm?sid=KY#Consumption>.

Energy Consumption by Source—U.S. Energy Information Administration, State Energy Data 2012: Consumption, and Kentucky State Energy Profile and Energy Estimates <www.eia.gov/state/seds/seds-data-complete.cfm?sid=KY#Consumption>.

Energy Consumption per GDP—U.S. Energy Information Administration and U.S. Department of Commerce, Bureau of Economic Analysis <www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep_fuel/html/fuel_te.html&sid=US&sid=KY>.

Entrepreneurial Breadth—Fairlie, Robert W. "Kauffman Index of Entrepreneurial Activity," Kauffman Foundation <www.kauffman.org/research-and-policy/kiea-data-files.aspx>.

Entrepreneurial Depth—U.S. Department of Commerce, Bureau of Economic Analysis, SA04 State income and employment summary.

Exports—U.S. Department of Commerce, International Trade Administration, <tse.export.gov/TSE/TSEhome.aspx>.

Farm Commodities—United States Department of Agriculture, Economic Research Service, U.S. and State Farm Income and Wealth Statistics <www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx>.

Farm Employment—U.S. Department of Commerce, Bureau of Economic Analysis, SA25N Total full-time and part-time employment by NAICS industry.

VARIABLES

Farms—These data come from various sources, including the Kentucky Department of Agriculture’s annual report, Kentucky Agricultural Statistics and the United States Department of Agriculture, Farms and Land in Farms, various years.

Food Insecurity—Household Food Security in the United States, various years, United States Department of Agriculture, Economic Research Service. Available online at: <www.ers.usda.gov/publications/err-economic-research-report/err173.aspx>. Competitor states is a weighted average of AL, GA, IL, IN, MS, MO, NC, OH, SC, TN, VA, and WV.

Food Stamp Participation—U.S. Department of Agriculture, Food and Nutrition Service <www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap>.

Foreclosures—Mortgage Bankers Association, National Delinquency Survey.

Free or Reduced-Price Lunch Eligibility—U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), “Public Elementary/Secondary School Universe Survey,” 2011–12, Version 1a <nces.ed.gov/>.

General Fund Receipts by Source—Kentucky Finance and Administration Cabinet and the Kentucky Revenue Cabinet, Annual Reports, various years.

Growth Rates, Taxes and Income—U.S. Census Bureau, Bureau of Economic Analysis & State Government Tax Collections.

Health Insurance Coverage for Children—U.S. Census Bureau, Health Insurance Historical Tables, H1B Series, HIB-5. Health Insurance Coverage Status and Type of Coverage by State—Children Under 18: 1999 to 2012 <www.census.gov/hhes/www/hlthins/data/historical/files/hihist5B.xls> and 2013 American Community Survey.

Health Insurance Coverage—U.S. Census Bureau, Health Insurance Historical Tables, H1B Series, HIB-4. Health Insurance Coverage Status and Type of Coverage by State--All Persons: 1999 to 2012 <www.census.gov/hhes/www/hlthins/data/historical/files/hihist4B.xls> and 2013 American Community Survey.

Health Outcomes by Education—Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011-2013.

High School Attainment—U.S. Department of Commerce, American Community Survey, 2013, 1-year estimate <www.census.gov/acs/www/>.

High School Graduation Rate—U.S. Department of Education, ED-Facts/Consolidated State Performance Report, 2012-13: <www2.ed.gov/admins/lead/account/consolidated/index.html>.

Higher Education Expenditures (in the U.S.)—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

High-Speed Internet—American Community Survey, Table B28002, 2013 1-Year estimate.

High-Technology Establishments—Using the National Science Foundation and

VARIABLES

Milken Institute designations of 4-digit NAICS codes and County Business Patterns data on number of establishments, we calculate the percentage that are considered high-tech establishments. Here are the 50 NAICS codes used: 1131, 1132, 2111, 2211, 3241, 3251, 3252, 3253, 3254, 3255, 3259, 3332, 3333, 3336, 3339, 3341, 3342, 3343, 3344, 3345, 3346, 3353, 3364, 3369, 4234, 4861, 4862, 4869, 5112, 5161, 5171, 5172, 5173, 5174, 5179, 5181, 5182, 5211, 5232, 5413, 5415, 5416, 5417, 5511, 5612, 8112, 3391, 5121, 5191, 6215.

Highways Expenditures (in the U.S.)—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Household Income—U.S. Census Bureau, State Median Income, Annual Social and Economic Supplement, Table H-8B. Median Income of Households by State Using Three-Year Moving Averages: 1984 to 2012, and the Annual Social and Economic Supplement. The competitor state average is not a weighted average; instead, it is a simple average of the median household incomes of the 12 competitor states. Household income includes income of the householder and all other people 15 years and older in the household, whether or not they are related to the householder. The median is the point that divides the household income distribution into halves, one half with income above the median and the other with income below the median. The median is based on the income distribution of all households, including those with no income. The distributional data is a one-year (2013) estimate from the American Community Survey.

Housing Starts—U.S. Census Bureau.

Income Distribution—These data are from the Current Population Survey (CPS), March supplements, which, since 2005, is called the Annual Social and Economic Supplement. The survey asks about income in the previous year, so, for example, the March 2013 supplement provides income data for 2012. The data used in this analysis were downloaded from IPUMS-CPS, courtesy of Miriam King, Steven Ruggles, J. Trent Alexander, Sarah Flood, Katie Genadek, Matthew B. Schroeder, Brandon Trampe, and Rebecca Vick. Integrated Public Use Microdata Series, Current Population Survey: Version 3.0. [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

Income Ratio—See Income Distribution above for data source information.

Income Sources by Location—U.S. Department of Commerce, Bureau of Economic Analysis, and the 2013 Urban-Rural Continuum Code, available at <www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UqR_ZeLs2HY>.

Industrial Research & Development—National Science Foundation, Business and Industrial R&D, various years <www.nsf.gov/statistics/industry/>.

Job Growth—U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics, total private, all employees, not seasonally adjusted <www.bls.gov/>.

Labor Force Participation—American Community Survey, U.S. Census Bureau, 2011-2013 3-year estimate.

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Land Use—U.S. Department of Agriculture, National Resource Inventory.

Manufacturing Employment Growth, Major MSAs—U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics, not seasonally adjusted <www.bls.gov/ces/#data>.

Median Age—U.S. Census Bureau.

Medicaid Beneficiaries—Kaiser Family Foundation, <www.statehealthfacts.org> and Centers for Medicare & Medicaid Services, State/County Penetration File, March 2014 <www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/MA-State-County-Penetration.html>.

Mining and Coal—These data are from the Bureau of Economic Analysis and the Energy Information Administration, Annual Coal Report, various years.

Minority Population—U.S. Census Bureau.

Monthly Employment Growth, KY and U.S.—U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics, seasonally adjusted <www.bls.gov/ces/#data>.

Monthly Employment Growth, Major MSAs and KY—U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics, seasonally adjusted <www.bls.gov/ces/#data>.

Motor Gasoline Expenditures—U.S. Energy Information Administration, State Energy Data System <www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep_fuel/html/fuel_te.html&sid=US&sid=KY>.

Narrow Roads—Federal Highway Administration, Highway Statistics 2012, Table HM-53 <www.fhwa.dot.gov/policyinformation/statistics.cfm>.

Neighborhoods—2011 National Survey of Children's Health <childhealthdata.org>.

Nonemployer Establishments—U.S. Census Bureau, Nonemployer Statistics <www.census.gov/econ/nonemployer/historical.htm>.

Nonprofits—Internal Revenue Service, Exempt Organizations Business Master File (2014) <www.irs.gov/Charities-&-Non-Profits/Exempt-Organizations-Business-Master-File-Extract-EO-BMF>.

Number At Risk for Risk Behaviors—Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011-2013.

Oral Health—Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, various years <www.cdc.gov/brfss/technical_infodata/index.htm>.

Patents (by County)—U.S. Patent and Trademark Office, Utility Patents <www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm>. Population data are from the U.S. Census Bureau <www.census.gov>. The competitor states is a weighted average of AL, GA, IL,

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IN, MS, MO, NC, OH, SC, TN, VA, and WV.

Per Capita Personal Income—U.S. Department of Commerce, Bureau of Economic Analysis, SA1-3 Personal income summary.

Performance Test Scores—U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various assessments, <nces.ed.gov/nationsreportcard/naepdata/>.

Personal Bankruptcies—The Administrative Office of the U.S. Courts <www.uscourts.gov/Statistics/BankruptcyStatistics/quarterly-filings-3-month-chapter-district.aspx>. The population data are from the U.S. Census.

Population by Age Group—U.S. Census, 2000, and 2013 American Community Survey 1-Year Estimates.

Population Change—U.S. Census Bureau, Decennial Census, 2000 and the American Community Survey 2013 1-year estimate.

Population Totals—U.S. Census Bureau, Urban and Rural Population: 1900 to 1990 <www.census.gov/population/www/censusdata/files/urpop0090.txt>. The 2000 and 2010 population totals were obtained from the Census totals available at <www.census.gov>. The competitor state average of 41 percent increase is a weighted average of the 12 competitor states.

Poverty Rate by County—U.S. Census Bureau, Small Area Income and Poverty Estimates, <www.census.gov/did/www/saipe/>.

Poverty Rate—U.S. Census Bureau, Current Population Survey, March Supplement, various years <www.census.gov/cps/data/cpstablecreator.html>.

Premature Death—Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, County Health Rankings 2014, <www.countyhealthrankings.org>.

Public Welfare & Public Assistance (in the U.S.)—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Quarterly Percentage Change in Real GDP, U.S.—U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Account Tables, Section 1 <www.bea.gov/national/nipaweb/DownSS2.asp>.

Recycling—Kentucky Energy and Environment Cabinet, Division of Waste Management, Annual Report—Fiscal Year 2014 <waste.ky.gov>.

Residential Electricity Costs—U.S. Energy Information Administration, Electricity <www.eia.gov/electricity/sales_revenue_price/xls/table5_a.xls>.

Revenue from Federal Transfers—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

Risk Behaviors and Chronic Disease—Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2013.

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Road Condition—Federal Highway Administration, Highway Statistics 2012, Table HM-64 <www.fhwa.dot.gov/policyinformation/statistics.cfm>.

Rural Population—U.S. Census Bureau, Urban and Rural Population: 1900 to 1990 <www.census.gov/population/www/censusdata/files/urpop0090.txt>. The 2000 and 2010 population totals were obtained from the Census totals available at <factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. The competitor state average is a weighted average of the 12 competitor states.

Sales Tax by Age Group—U.S. Department of Labor, Bureau of Labor Statistics, Consumer Expenditure Survey, 2010-2011 <www.bls.gov/cex/>.

SBIR/STTR Awards by County—Small Business Innovation Research, Small Business Technology Transfer <www.sbir.gov/pastawards>.

Science and Engineering Graduates—Calculated from the Integrated Postsecondary Education Data System (IPEDS) using 2013 STEM-designed CIP codes.

Small Business Innovation Research—Small Business Innovation Research, Small Business Technology Transfer <www.sbir.gov/pastawards>.

Social and Emotional Support—The Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2008-2010.

Solid Waste (Disposal)—Kentucky Energy and Environment Cabinet, Division of Waste Management, Annual Report—Fiscal Year 2014 <waste.ky.gov>.

Sources of Personal Income—U.S. Department of Commerce, Bureau of Economic Analysis, SA04 State income and employment summary.

State and Local Expenditures—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

State and Local Own Source Revenue—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

State and Local Revenue by Source—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

State Portion of Total Revenue—U.S. Census Bureau, 2012 Annual Surveys of State and Local Government Finances <www.census.gov/govs/estimate/>.

State Technology & Science Index—Milken Institute, 2014 State Technology and Science Index <www.milkeninstitute.org>.

Structural Deficit—William Hoyt, William Fox, Michael Childress, and James Saunoris, Final Report to the Governor's Blue Ribbon Commission on Tax Reform, September 2012, University of Kentucky, Center for Business and Economic Research <cber.uky.edu>.

Supplemental Security Income (SSI)—Social Security Administration, Master Beneficiary Record and Supplemental Security Record, 100 percent data <www.ssa.gov/policy/docs/statcomps/ssi_sc/>.

Tax Collections and Personal Income—U.S. Department of Commerce, Bureau of

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Economic Analysis, and U.S. Census Bureau, State Government Tax Collections, various years <www.census.gov/govs/statetax/>.

Technology Use by Education—This is derived from “The Internet in Kentucky,” CBER Issue Brief, Table 2, September 2013.

Temporary Assistance for Needy Families—The Administration for Children and Families, U.S. Department of Health and Family Services <www.acf.hhs.gov/programs/ofa/resource/caseload-data-2013> and <www.acf.hhs.gov/sites/default/files/ofa/2013_recipient_tan.pdf>.

Total Research & Development—National Science Foundation/National Center for Science and Engineering Statistics. National Patterns of R&D Resources, various years <www.nsf.gov/statistics/natlpatterns/>.

Toxic Releases—U.S. Environmental Protection Agency, Toxics Release Inventory, TRI Explorer <iaspub.epa.gov/triexplorer/tri_release.chemical>. These data are TRI On-site and Off-site Reported Disposed of or Otherwise Released (in pounds), for All industries, for All chemicals, 2013.

Transfer Payments by County—Bureau of Economic Analysis.

Transition from Goods to Services—U.S. Department of Commerce, Bureau of Economic Analysis <www.bea.gov/itable/>. Using the NAICS and SIC classifications, we categorize these industries as “goods producing”: agriculture, forestry, fishing, and hunting; mining; construction; and manufacturing. The rest of the industries are considered “service providing.” Government includes federal, state and local.

Trust—2011 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 16 and older.

Unemployment Rate, KY and U.S.—U.S. Department of Labor, Bureau of Labor Statistics, Civilian Unemployment Rate, seasonally adjusted <data.bls.gov>. The unemployment rate represents the number of unemployed as a percentage of the labor force. Labor force data are restricted to people 16 years of age and older, who currently reside in 1 of the 50 states or the District of Columbia, who do not reside in institutions (e.g., penal and mental facilities, homes for the aged), and who are not on active duty in the Armed Forces.

Urbanization—U.S. Department of Agriculture, Economic Research Service, Major Land Uses (MLU) series <www.ers.usda.gov/data-products/major-land-uses.aspx#25977>.

Value-Added Food Production—U.S. Census Bureau, Annual Survey of Manufactures, various years.

Venture Capital—PricewaterhouseCoopers, National Venture Capital Association, Money Tree Report, historical trend data, <www.pwcmoneytree.com/MTPublic/ns/nav.jsp?page=historical>.

Volunteer Hours—These data are from the 2013 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 16 and older.

Volunteer Rate by Education—These data are from the 2013 Current Population Survey

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(CPS) September Volunteer Supplement results, based on adults aged 25 and older.

Volunteer Rate— These data are from the 2013 Current Population Survey (CPS) September Volunteer Supplement results, based on adults aged 16 and older. Volunteers are considered individuals who performed unpaid volunteer activities through or for an organization at any point during the 12-month period, from September 1 of the prior year through the survey week in September of the survey year.

Wages—Bureau of Economic Analysis, CA34, Wage and Salary Summary, and the 2013 Urban-Rural Continuum Code, available at <www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UqR_ZeLs2HY>.

Water Quality—United States, Environmental Protection Agency, Fiscal Year 2011 Drinking Water and Ground Water Statistics <water.epa.gov/scitech/datait/databases/drink/sdwisfed/howtoaccessdata.cf>.

White, Non-Hispanic Population—U.S. Census Bureau.

Women, Infants, and Children (WIC)—U.S. Department of Agriculture, Food and Nutrition Service <www.fns.usda.gov/pd/wic-program>.

Youth Alcohol and Drug Abuse—Centers for Disease Control and Prevention, Youth Risk Behavior Surveillance System (YRBSS), <www.cdc.gov/healthyyouth/yrbs/index.htm>.

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